NER
C 45
7:39
1975

Digitized by the Internet Archive
in 2014

https://archive.org/details/wildlifeinnorthc39nort

NER
C 45
7:39
1975

North Carolina State Library
Raleigh

VER
45
:39/1

BIENNIAL REPORT ISSUE
For the Period
July 1, 1972 - June 30, 1974

North Carolina State Library
Raleigh
N. C.
Doc.

Wildlife IN NORTH CAROLINA

JANUARY 1975

State of North Carolina

Wildlife Resources Commission

RALEIGH, N. C. 27611

W. K. ANDERSON, Newland
Chairman
WALLACE E. CASE, Hendersonville
O. JACK HOOKS, Whiteville
ROY A HUNEYCUTT, Locust
DR. LATHAN T. MOOSE, Winston-Salem

CLYDE P. PATTON, Raleigh
Executive Director
ROSCOE D. SANDLIN, Jacksonville
JAY WAGGONER, Graham
V. E. WILSON, III, Rocky Mount
O. L. WOODHOUSE, Grandy

His Excellency, The Governor of North Carolina
The Honorable Members of the General Assembly
Raleigh, North Carolina

Dear Sirs:

It is with a great deal of pride and pleasure that we submit to you the Wildlife Resources Commission's 14th Biennial Report for the period of July 1, 1972 to June 30, 1974. Reflected in this report are the accomplishments of the Wildlife Resources Commission's dedicated staff during these two years. We hope that you will share our feeling that these efforts have resulted in better hunting, fishing, a growing wildlife population, and a public better informed in matters of wildlife management.

We extend our gratitude to you for your continued support of this progressive program which has been developed and carried forward for the enrichment of our State and the perpetuation of its valuable wildlife resources.

By working together, we feel confident that we can meet the challenges of the future; we welcome your advice and suggestions toward this end.

Respectfully yours,

W. K. Anderson

W. K. Anderson, Chairman

STATE OF NORTH CAROLINA

JAMES E. HOLSHOUSER, JR.
GOVERNOR

DEPARTMENT OF
NATURAL AND ECONOMIC RESOURCES
JAMES E. HARRINGTON, JR.
SECRETARY

NORTH CAROLINA
WILDLIFE RESOURCES COMMISSION

W. K. ANDERSON, CHM. _ _ _ _ _ NEWLAND
ROSCOE D. SANDLIN, V. CHM. JACKSONVILLE
WALLACE E. CASE, SECY. _ HENDERSONVILLE
D. JACK HOOKS _ _ _ _ _ _ _ WHITEVILLE
ROY A. HUNEYCUTT _ _ _ _ _ _ _ LOCUST
DR. LATHAN T. MOOSE _ _ WINSTON-SALEM
JAY WAGGONER _ _ _ _ _ _ _ _ GRAHAM
V. E. WILSON, III _ _ _ _ _ _ _ ROCKY MT.
ORVILLE L. WOODHOUSE _ _ _ _ _ GRANDY

CLYDE P. PATTON
EXECUTIVE DIRECTOR

EUGENE E. SCHWALL ROBERT B. HAZEL
ASSISTANT EXECUTIVE DIRECTORS

DIVISION CHIEFS

REX GARY SCHMIDT _ _ _ _ _ _ EDUCATION
RICHARD B. HAMILTON _ _ _ _ _ _ _ GAME
W. DONALD BAKER _ _ _ INLAND FISHERIES
DONALD E. CURTIS _ _ _ _ _ PROTECTION
CHARLES R. FULLWOOD, JR. _ MOTORBOATS
AND WATER SAFETY

The Editor gratefully receives for publication news items, articles, and photographs dealing with the North Carolina out-of-doors, but reserves the right to reject materials submitted. Full credit is given for all materials published.

Have you moved recently? Change your address promptly. Either send in an old mailing label from your magazine along with new address or type or print complete old label information exactly as it appears on your magazine.

WILDLIFE IN NORTH CAROLINA is published at the Wildlife Resources Commission offices, Albemarle Building, Raleigh, N. C.

Phone Number AC 919/829-7123

* * *

Second class postage paid at Raleigh, North Carolina 27611.

* * *

SUBSCRIPTION RATE—$2.00 per year (12 issues). Add $1.00 for overseas postage except APO, Canada and U. S. possessions. Back issues —$.25 per copy plus $1.00 minimum for handling and mailing; back issues may not be available. Send check or M. O. payable to WILDLIFE RESOURCES COMMISSION. Stamps cannot be accepted. Any employee of the Wildlife Resources Commission may accept subscriptions, or send to WILDLIFE, Albemarle Building, 325 N. Salisbury Street, Raleigh, N. C. 27611.

Wildlife circulation this issue 90,200

Wildlife IN NORTH CAROLINA

The official publication of the NORTH CAROLINA WILDLIFE RESOURCES COMMISSION, Raleigh 27611. A monthly magazine devoted to the protection and restoration of our wildlife resources and to the improvement of hunting and fishing in North Carolina.

VOL. XXXIX, NO. 1 JANUARY, 1975

BIENNIAL REPORT ISSUE

Letter of Transmittal . . . . . Page 2

The Commission . . . . . Page 4

Administrative Services . . . . . Page 5

Division of Inland Fisheries . . . . . Page 6

Division of Protection . . . . . Page 15

Division of Game . . . . . Page 17

Interagency Wildlife Cooperation . . . . . Page 26

Division of Education . . . . . Page 27

Division of Motorboats and Water Safety . . . . Page 30

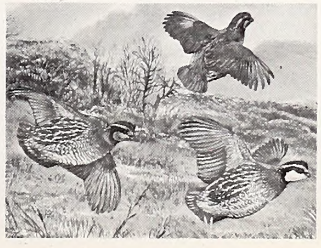
Resource-O-Gram . . . . . Page 32

Budget Summaries . . . . . Page 33

EDITORIAL STAFF

DUANE RAVER _ _ _ _ _ _ _ _ _ _ EDITOR
LUTHER PARTIN _ _ WRITER-PHOTOGRAPHER
JIM DEAN _ _ _ _ WRITER-PHOTOGRAPHER
TED DOSSETT _ _ _ WRITER-PHOTOGRAPHER
ROD AMUNDSON _ _ CONTRIBUTING EDITOR

An objective of all levels of government should be to achieve and sustain a balance of the social, ecological, and economic benefits derived from natural resources. Without such balance none of the factors on the scale will be worth weighing.



The "King of Game Birds?" Certainly the bobwhite quail rates near the top of the list for many hunters. The birds respond to management procedures including food and cover plantings. Unless the habitat is satisfactory, no amount of "stocking" or release of pen-reared birds will help. Acrylic painting by Duane Raver.

THE COMMISSION

The North Carolina Wildlife Resources Commission has the dual purpose of serving both the interest of sportsmen in the state and also the rich heritage of fish and wildlife. One does not exist without the other.

Without an environment rich in wildlife resources (fish, game and all the rest), there can be no enjoyment of these resources. For example, without deer, there can be no deer hunters. Conversely, without deer hunters, there would undoubtedly be far fewer deer in the state than there are now because sportsmen-supported game management and protection programs have given the state its largest deer population in recorded history.

Balancing the twin goals of the sportsman's interests and the best interests of our resources has been the Wildlife Commission's responsibility for more than 25 years since the Commission was established in 1947 by the North Carolina General Assembly.

"More sport for more people with equal opportunity for all," has become one of the informal mottos of the Wildlife Commission. Another might be "if the best interests of our natural resources are protected, then the best interests of sportsmen and other citizens of the state are also protected."

The name Wildlife Resources Commission refers to both the nine-member policy-making board appointed by the Governor, and to the professional agency consisting of the Executive Director, Clyde P. Patton, and the personnel employed by him subject to Commission approval to accomplish the work.

The policy-making Commission (board) basically is designed to represent the public; to keep a hand on the pulse of the sportsmen across the state. Wildlife Commissioners are interested sportsmen who live in nine separate Wildlife Districts across the state and therefore maintain contact with local hunters, fishermen and boatmen.

A staff under the executive director provides the professional expertise to accomplish the Wildlife Commission's five-point program which includes REGULATION ENFORCEMENT, MANAGEMENT, EDUCATION and RESEARCH.

This staff works out of central offices located in the Albemarle Building, 325 N. Salisbury Street, Raleigh, North Carolina. Housed here are the divisions of Protection, Inland Fisheries, Game, Education and Motorboats and Water Safety. The office of the Executive Director and Administrative Services, including sections dealing with financial transactions, data processing, licensing of hunters and fishermen, and motorboat registration also share the central offices. Also strategically located across the state in nine districts are wildlife protectors, fish and game biologists.

At regular monthly meetings of the Commission board—sometimes more frequent meetings are held—the professional staff meets with the board and the five-point program is administered by a blending of the sportsmen's interests and the needs of wildlife resources. Money to support wildlife programs is derived largely from the sale of licenses and from motorboat registration, supplemented each year by Federal Aid funds through an apportionment of a share of the excise tax on sporting arms, ammunition, and sport fishing tackle. An additional supplement began in 1959 when one-eighth of one percent of North Carolina's gasoline fuel tax was appropriated for the purpose of promoting boating safety on the waters of the state.

The Wildlife Commission is therefore virtually self-supporting and gets no funds from general taxation or from the General Fund.

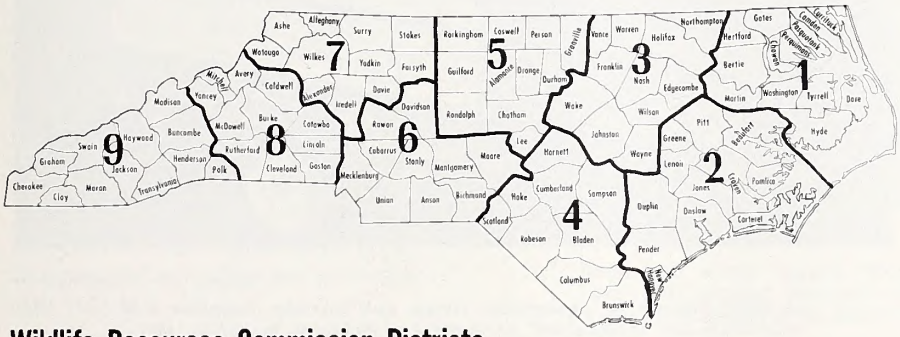
During the 1972-74 biennium, the Wildlife Commission met 17 times for regular monthly meetings and conducted 25 public hearings primarily in the process of adopting hunting and fishing regulations. All Wildlife Commission meetings are open to the public, and most are held in Raleigh at the Albemarle Building in the fourth floor conference room.

While the adoption or modification of regulations governing hunting, fishing, trapping, or boating comprises a major part of the work of the Commission board and staff, many policies relative to other

PHOTO BY JIM DEAN

Under legislation passed by the 1973 General Assembly, vacancies occurring through the expiration of the term of a member of the Wildlife Commission were filled by the Governor from a list of persons chosen by a ballot at a series of public meetings. Wallace Case (center, below) and V. E. Wilson, III, right, were so selected and took office during the biennium.

Two series of strategically located public hearings are held each year to consider recommendations for hunting and fishing regulations. These public hearings form the basis for Commission adoption of annual regulations with each suggestion carefully considered.

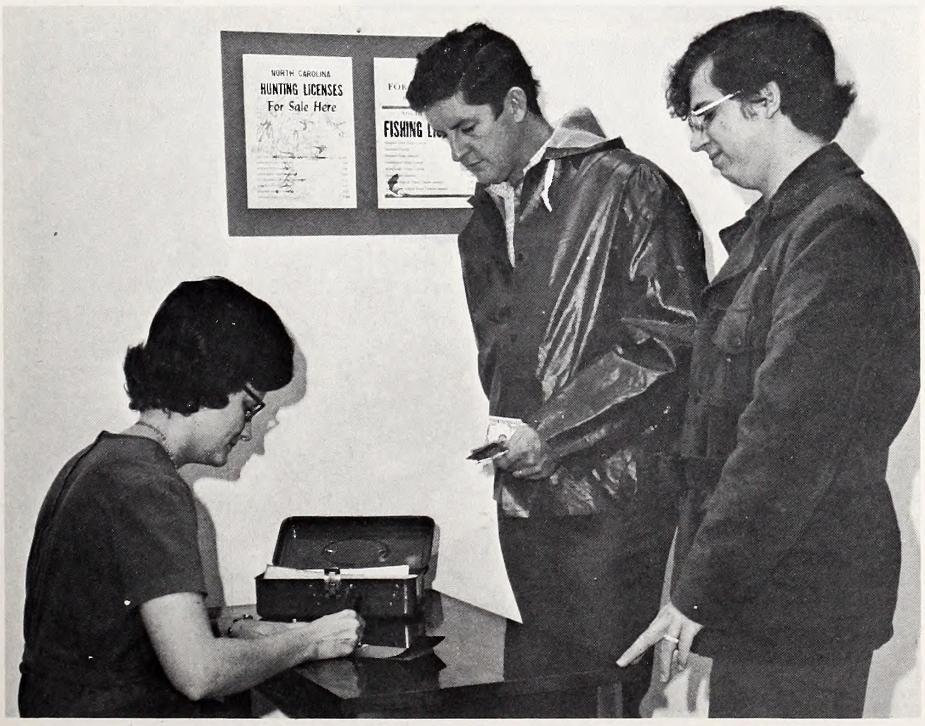


Wildlife Resources Commission Districts

phases of the five-point program are also considered, including enforcement of regulations, education of the public regarding wildlife, hunter and boating safety, management of fish and game and research to determine better methods of improving wildlife habitat and wildlife populations.

A typical meeting might cover the following: 1) review of public opinion of proposed changes in fishing regulations gained at public hearings held across the state. 2) the implementation of a new enforcement policy for big game hunting on Game Lands. 3) the approval for construction of a new free boating access area. 4) consideration of new habitat improvement recommendations for a species of fish or game. 5) consideration of a new budget. 6) consideration of a proposal for a new research program to learn more about a species of fish or game. 7) review of a proposal to provide a wildlife conservation teacher's guide for public schools. These and many similar subjects are routine considerations at Wildlife Resources Commission board and staff meetings.

ADMINISTRATIVE SERVICES



Revenue collected through the sale of hunting, fishing and trapping licenses and other permits goes to support the program of the Wildlife Commission. This program is carefully designed to return the sportsman's dollar to him in terms of better hunting, fishing, and a prospering wildlife population.

Without the smooth functioning of Administrative Services all other activities of the Commission would be impaired and the public image would quickly deteriorate.

Among the many activities routinely handled are the collection of revenue through the sale of licenses — Commission programs use no general state funds or taxes. The licensing of sportsmen—hunters and fishermen—and certain other activities dealing with wildlife-related commercial operations, registration of motorboats, budgeting, purchasing, and the disbursement of funds, accounting and auditing, data processing, and all of the housekeeping duties including mail handling, recruitment and coordination of personnel, and operation of warehouse facilities to supply materials and equipment to field stations and operations are carried on by Administrative Services at a minimal cost compatible with efficiency and good service.

The skilled staff engaged in carrying out these activities is dedicated, even though most of those employed are in low profile and their faces are not as familiar as the employees directly involved in meeting and working with the public.

Federal Aid funds in the amount of $2,584,217 were apportioned to North Carolina to help finance fish and game development, hunter safety and boating safety programs. These funds are in the form of a reimbursement for funds spent by the Commission on approved projects. Other income was derived from the sale of timber from Commission owned and managed game lands and other activities; for example, the sale of publications such as WILDLIFE IN NORTH CAROLINA which is published monthly and circulated to about 92,000 subscribers.

An important element in the stability of the Commission's financing is the Wildlife Operating Reserve which provides an essential flexibility for planning ahead to meet fluctuations in revenue relating to economic problems.

Employee turnover during the biennium remained low in comparison with many other state and federal agencies. As has been often said, "Employment in the wildlife field is envied by many." This has been reflected in the quality of individual applicants and their high standards of performance, once employed.

PHOTO BY LUTHER PARTIN

A wide variety of equipment items and various supplies and materials are maintained at central warehouse facilities. Here, new boats are prepared for issuing to field personnel.

DIVISION OF INLAND FISHERIES

Management Activities

Fish Kills

Any fish kill in the public waters of North Carolina immediately raises two questions of major importance: (1) What caused the fish to die? (2) What was the magnitude of the kill? Determining the causative agent of the kill is the responsibility of the Department of Environmental Management, but determining the species, numbers, and weights of the fishes killed is a responsibility of the Division of Inland Fisheries.

Fish kill investigations are categorized into two types: 1) Formal Fish Kill Investigations, and 2) Informal Fish Kill Investigations.

Formal Fish Kill Investigations are those in which dead fish are collected in toto or on a statistically sound sample basis as determined by the fishery biologist in charge of field operations. Division of Protection personnel normally collect the specimens used in assessing the magnitude of the kill. Monetary values then are assigned

PHOTO BY TOM ROLLINS

One of the unpleasant tasks associated with fish kills is the collection of dead fish for the determination of an estimated dollar value of the fish killed. This is the Rocky River kill which occurred in the fall of 1973.

to the estimated numbers of fishes killed in accordance with the values adopted by the Southern Division, American Fisheries Society. In addition to this, transportation costs for restocking and personnel investigative costs are also itemized in a formal fish-kill report which is forwarded to the Department of Water and Air Resources for recovery of damages from the designated pollutor.

Informal Fish Kill Investigations are those which are investigated but at which no fish are collected and from which no attempt will be made to recover damages.

Informal investigations are assigned to those kills at which personnel from the Department of Environmental management determine that the kill resulted either from natural causes or from pollutional causes that cannot possibly be traced to its source; or from the evidence, that insufficient numbers of fish have been killed to make the investigation economically feasible.

During 1972-73, a total of 42 formal investigations were made, and 26 informal investigations. A high percentage of these were noted in the summer months. This pattern continued for 1973-74 with 62 formal investigations and 14 informal investigations for this period.

Lake and Pond Management

Small lakes and ponds provide many hours of angling recreation in North Carolina. This is particularly true of municipal water supply lakes that are located near centers of population. The fish populations of small impoundments can be influenced by fishery management techniques and thus the sport fishing often can be improved by the implementation of a management program. The Division of Inland Fisheries feels that it is desirable to conduct management programs on small lakes and ponds open to the public in order to provide high quality angling.

Many small lakes and ponds, open to public fishing, are managed by the Division of Inland Fisheries under contractual agreements with the owners of the impoundments. These agreements are made primarily with municipalities concerning the management of city water supply lakes. Under the terms of the contracts, the Division of Inland Fisheries agrees to inventory the fish populations and to make pertinent management recommendations. The owners agree to carry out all recommendations and to collect any supplementary data that is deemed necessary. Some of the management practices currently employed are: stocking of game and forage fish species, installing fish attractors, installing spawning sites, carrying out fertilization and supplemental feeding programs, and controlling nongame fish populations where such control is necessary.

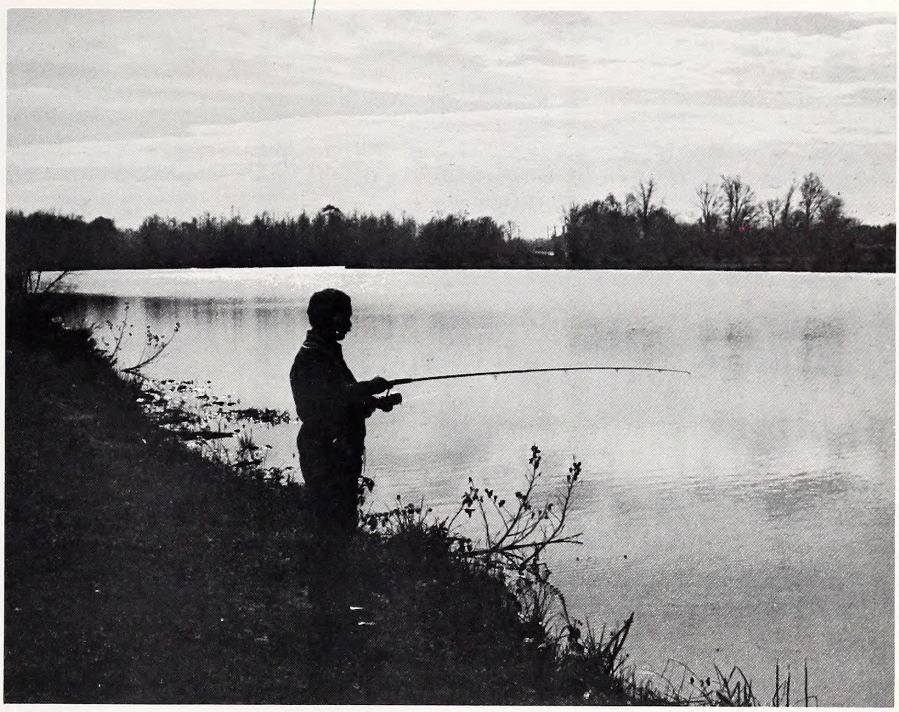


PHOTO BY LARRY BIRCHFIELD

Municipal water supply reservoirs and lakes provide many hours of angling pleasure. Fishery management techniques were recommended in many cases during the biennium.

Farm ponds are common throughout the state. Considered individually these ponds receive very little fishing pressure. Collectively, however, they provide many hours of sport fishing which, in turn, reduces the fishing pressure placed upon public waters. Private ponds have an enormous potential for providing a high quality angling experience to many times the number of anglers now utilizing these waters. However, at the present time many ponds are poorly managed and do not provide the angling sport of which they are capable.

In order to improve upon the fishery management of private ponds, the Division of Inland Fisheries provides technical advice to pond owners upon receiving a written request. Pond visitations are made by Division personnel at such times as their regular schedule of duties will allow. Recommendations are made regarding the solution of specific problems, such as vegetation control or fish population imbalance, as well as general management practices which will help avoid problems. However, the Division of Inland Fisheries does not provide fish for the stocking of waters that are not open to public fishing, nor do personnel carry out management recommendations made for these waters.

During the biennium, a total of 525 management recommendations and programs for small lakes and ponds was prepared by the division.

Reservoir Management

Reservoirs of 500 acres and larger total approximately 375,000 surface acres lying wholly or partially within North Carolina. Large reservoirs are difficult to effectively manage simply because all fishery management practices must be conducted on an immense scale. Reservoir fisheries management procedures generally are limited to stocking of new species, control of overabundant species, water level manipulation, catch regulations, and publicity to increase harvest. Annual stockings of threadfin shad or occasional stockings of blueback herring, alewives, or opossum

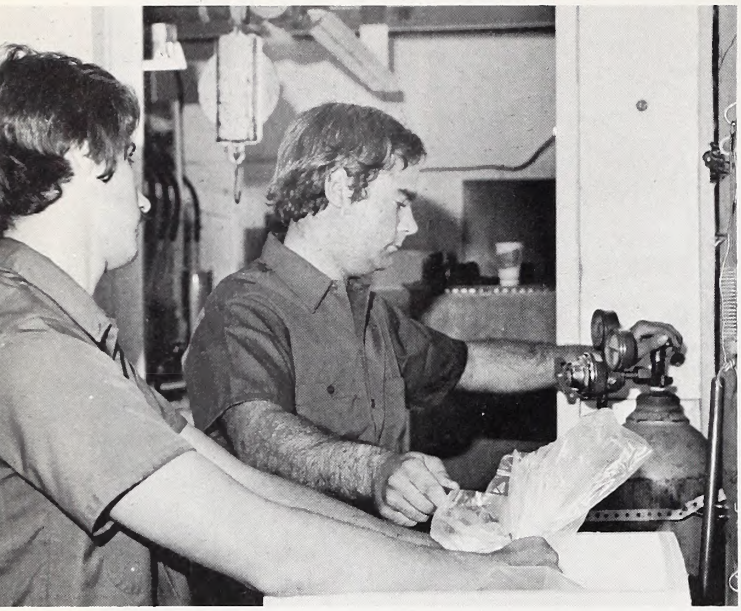


PHOTO BY REX G. SCHMIDT

Striped bass fry, hatched at the Weldon Hatchery, are shipped in water-filled plastic bags into which a supply of oxygen has been placed. They will be transported to waters which are suitable for stripers but which have low or non-existent populations. Thousands are stocked annually.

PHOTO BY RON KLAUDA

Striped bass fingerlings, reared in one of the Wildlife Commission's warm-water hatcheries, will be placed in reservoirs for "put, grow and take" fisheries. This technique has provided a sport fishery which otherwise could never have existed, and at a reasonable cost figure.

shrimp have been implemented on other large reservoirs. The forage stocking program generally has been successful in improving the food supply for game fishes.

Striped bass have been introduced recently in Badin Lake and Lake Norman. The striped bass stockings provide a "put, grow, and take" fishery. Stripers contributed approximately two percent of the total poundage of fish harvested on Badin Lake in 1972, as determined from an extensive catch survey. The Badin catch survey, and limnological and fish population data were gathered for two years on Badin Lake and Lake Gaston. The study is in cooperation with 14 other southeastern states to determine ecological factors influencing success of predator introductions and to evaluate their effects on existing fish populations and sport fisheries of warm-water reservoirs.

Since largemouth bass play an important part in controlling the balance of fish populations, but appear to be harvested out of proportion to their abundance, the minimum size limit was increased from 10 to 12 inches in the Piedmont and coastal areas of North Carolina. Fish attractors or reefs constructed of old tires have been installed in several reservoirs to concentrate fish for angling. Informational fishing brochures are being prepared for selected reservoirs in attempts to help anglers increase their catch.

During the biennium, a total of 40 management recommendations was prepared by the division.

River and Warm-Water Stream Management

Warm-water rivers and streams of North Carolina are represented by the swift, generally turbid streams of the piedmont and the slow-flowing blackwater swamp-drainage streams of the coast. The diversity of chemical and physical characteristics is great. This diversity influences the variety of organisms which inhabit the warm-water rivers and streams. Much of the fishery biologist's time is devoted to obtaining background information on the varied aquatic communities. This knowledge is beneficial in environmental assessment of watershed projects, development of fishing regulations, or any event which may be detrimental to the rivers and streams and particularly to the fish populations within them.

Because a river system is an open system, many of the management practices common to the management of lakes or ponds, are not physically and/or economically feasible. Major efforts therefore are devoted to the preservation of natural conditions within the stream rather than management.

In some instances, a specific management need is identified which has a practical application. This is the case on the Cape Fear River with respect to runs of anadromous fish. Because of navigational locks on the Cape Fear River,

Hickory shad and the larger white shad, ascend coastal rivers each spring to spawn. On the Cape Fear, navigational locks are opened to permit this spawning migration.

passage of anadromous fishes to the upper reaches of the river above the locks is restricted. To allow passage to upstream spawning areas, the fish are "locked" upstream in a manner similar to the passage of a vessel through the locks. The locks are periodically sampled to determine the effectiveness of the locking operation.

In many of our coastal streams, gill nets are set for migratory saltwater fishes. An investigation is being conducted to determine the numbers and species of game fishes captured incidental to this netting. Other aspects being checked are location of the nets in the stream and nearness to the shoreline. If the results of this investigation indicate that there is a need to protect the sport fishery in these streams, additional regulations may be required which will protect the game fish populations in these streams.

During the biennium, a total of 41 management recommendations was prepared by the division.

Trout Management

North Carolina has more flowing water capable of supporting mountain trout than any other state in the southeastern United States—roughly some 4,000 miles. All of this mileage is located in the 26 westernmost counties—counties in or bordering the Appalachian Mountain chain. Here, at elevations greater than 1,500 feet above sea level, stream temperatures generally are cool enough to support mountain trout. However, trout habitat in North Carolina is a fragile system, and the works of man often tip the balance against trout survival. Many concerned North Carolinians now are calling for laws to protect our trout streams from careless land-use practices.

In addition to making surveys and inventories, formulation of regulations and stocking lists, fishery biologists recommend the physical improvement of trout waters through the use of gabion dams, log dams, deflectors, rock placement dams and other devices which create pools and cover. New land developments, road construction, dam construction, logging, and mining operations along with other environmental changes can very quickly degrade or eliminate this irreplaceable resource. Constant environmental surveillance is an additional management function that is essential to protect the fishery.

During the biennium, a total of 342 management recommendations for trout streams was prepared by the division.

Regulations (Management)

For regulations to really be effective, social, cultural, political, and economic concerns must be integrated with biological criteria.

Normally, all regulations pass through seven phases between inception and adoption with subsequent enforcement.

Phase I—District Fishery Biologists meet with District Protection personnel and the social and political impacts of biologically based regulations are discussed. If management regulations are initiated because of social and/or political necessities, then the biological significance to the fishery in the immediate area will be incorporated into formulating the proposed regulation.

Phase II—All management recommendations are prepared by District Fishery Biologists for presentation to the Raleigh staff.

Phase III—All proposed regulation changes, additions, and deletions are discussed at a joint meeting of Fishery biologists and Division of Protection supervisory personnel. Also at this meeting, any economic factors governing regulation changes will be discussed.

Phase IV—All significant regulation changes approved in Phase III are presented at a regular monthly meeting of the Wildlife Resources Commission. Any proposed regulation deemed socially, politically, or economically undesirable by the Commission is deleted from the list. The balance of the proposed regulations then are presented across the state at three public hearings.

Phase V—Public hearings on proposed regulation changes are held in each of the state's three geo-

Trout streams are often subjected to damaging treatment from various sources including gravel operations such as this. Constant vigilance is maintained to find and correct these situations.

Stream improvements such as these low-cost log dams to catch excessive silt runoff, are often recommended. Such barriers may make the difference between good trout habitat or totally unsuitable habitat in the stream below.

PHOTOS BY JIM DEAN

graphical regions: Asheville in the Mountains, Salisbury in the Piedmont, and Washington in the Coastal Plains. At each meeting, all of the proposed regulation changes are presented to the general public for their reactions and interpretations. All public comments are recorded and reviewed by the Raleigh office staff.

Phase VI—The list of proposed regulation changes, along with the comments received at the three public hearings, then are presented to the Wildlife Commission for adoption at a regularly scheduled monthly meeting.

Phase VII—Upon adoption of the regulation changes by the Wildlife Commission, the entire regulation booklet is forwarded to the printer for publication.

The time interval between Phase I and Phase VII is approximately four months, and each year, the Inland Fishing Regulations are prepared for the following calendar year.

Information and Education

The Division of Inland Fisheries encourages each man to write and publish articles that deal with research and management of our fishery resources. Each supervisor has a slide projector and each man has been issued a camera. Additional visual aids are available from the Division of Education. During the year, many programs are presented to wildlife clubs, civic clubs, schools, and summer camps. Personnel are encouraged to write fisheries articles for the Commission magazine "Wildlife in North Carolina."

The Division has two full-time research biologists plus at least one research project in each of its nine districts. All personnel are encouraged to publish their research reports in technical journals relating to the fisheries field. All publications and articles are available upon request.

Survey and Inventory

Routine biological surveys and inventories are conducted to determine what management is needed to maintain a thriving fish population. Taking scales from selected fish species for analysis of their growth rates is an example of one of the procedures for checking on the well-being of a fish population. If growth rates are slow, fertilization and/or the stocking of additional forage fishes might be recommended. A few other examples of management recommendations that could be made after a survey of a small lake or a pond are: remove excess aquatic weeds, increase available cover via "fish hides," increase the harvest of certain overabundant species, and eliminate the existing fish population and restock the pond or lake.

PHOTO BY JIM DEAN

Inventorying fish populations in public waters is a continuing task in order to maintain close watch on the growth rates, the physical condition of the fish, population changes, and the presence of any diseases. Selected fish are weighed, measured and other critical data are recorded.

The fish populations of large lakes and reservoirs also are surveyed to see if management procedures are warranted. If another agency such as a power company conducts a fishery survey in inland waters, records are kept of their results so that this information is available for management decisions.

Rivers and streams in the state are sometimes surveyed to determine if log jams and obstructions should be removed or if more shoreline cover is needed.

Fish population surveys are conducted annually on all major "Native" and "Trophy Trout" streams, and on many "General Trout" streams as well. Sampling is done by electrofishing in most cases; but on occasion, cresol and/or rotenone are used. With fishing pressure increasing, these surveys are necessary in order to help keep a "finger on the pulse" of our streams. Toward the same end, a partial creel census carried out through wildlife protector interviews, is made annually on all "Native" and "Trophy Trout" streams and on selected "General" streams. Information gathered from creel checks and fish population surveys is used to spot long-term trends; and to evaluate the need for adjustments in fishing regulations, stocking, and degree of protector surveillance.

PHOTO BY LUTHER PARTIN

In the cold-water, oligotrophic reservoirs of the western mountains, a lack of suitable forage

seriously limits game fish populatins. In an attempt to improve this situation, the Division has conducted extensive survey and inventory work and literature reviews to determine where unfilled niches exist that could be exploited. As a result of these studies, several forage organisms have been introduced, including: Kokanee salmon, alewives and blueback herring, rainbow smelt, threadfin shad, gizzard shad, opossum shrimp, and the scud *Hyalella azteca*. Lake surveys have shown that reproducing populations of kokanee salmon, blueback herring, threadfin shad, gizzard shad, and *Hyalella* have been established. Surveys are being continued to determine the effect of the introductions on game fish populations, to evaluate the fate of the remaining introductions, and to explore the possible existence of unfilled niches that might suggest yet other untried forage organisms.

From time to time particular problems have required immediate investigation by the Division of Inland Fisheries. A recent example was the pressing need for information concerning the levels of mercury in our fishes, particularly in the Cape Fear River system. Another was the very recent outbreak of fish disease in the reservoirs of the Yadkin and Catawba rivers. With both of these problems, there was need for collection of a large amount of data in a comparatively short time to provide background data as the basis for any continuing investigations. The fish disease investigations were particularly urgent since the disease had reached a peak in its cycle and had generated intense interest and concern among sportsmen. A week of intensive sampling showed the geographical extent and severity of the disease and identified the two main causative organisms, the protozoan *Epistylis,* and the bacterium, *Aeromonas liquifaciens.*

Our Division is cooperating in other routine investigations concerning inland fishes. Pesticide analysis is being conducted on fishes captured from the Roanoke River and the Cape Fear River. In this case our agency is cooperating with the U.S. Fish & Wildlife Service of the U. S. Department of the Interior.

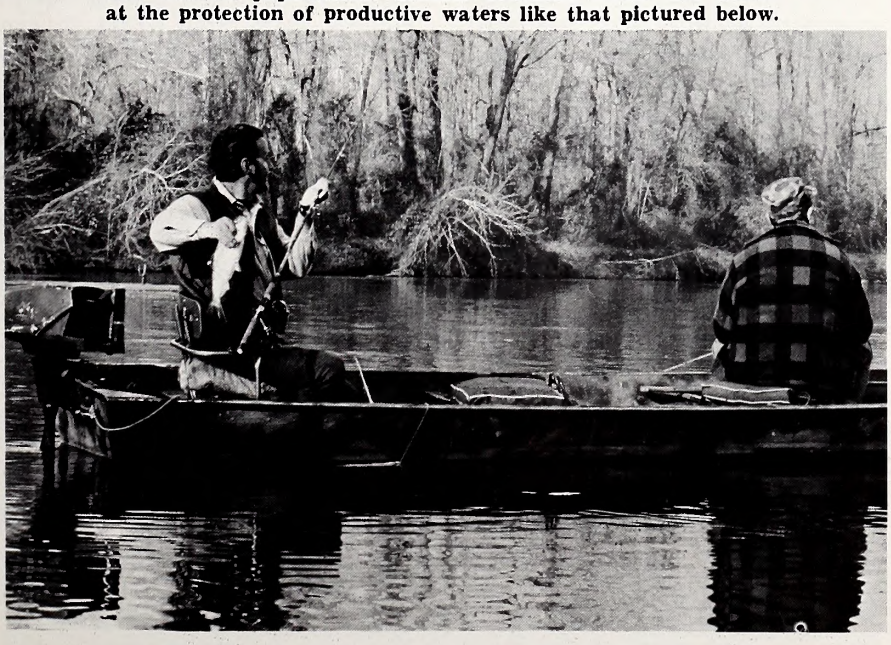
Research

Power Plants

Electric power steam generating stations produce enormous volumes of heated water as a result of normal operation and this heated water must be disposed of in some fashion. Belews Lake was designed as a cooling pond for receiving and storing heated effluent until the heat load is dissipated. The water can be recycled through the plant.

In addition to its main function as a cooling pond, Belews Lake also serves as a major source of outdoor recreation. For the past two and a half years, the Division of Inland Fisheries has been studying and monitoring conditions in Belews Lake prior to completion of the steam electric generating station on the lake (the plant will begin operating in May of 1974). A solid background of physicochemical data (monthly temperatures, dissolved oxygen concentrations, pH, alkalinities and secchi disc transparencies) has been obtained in addition to data on fishes. The developing fish populations have been sampled quarterly by means of trammel netting, electrofishing, and annual cove rotenone samples. With these and other sampling techniques, information has been gathered on the relative abundance, food habits, growth rates, condition factors, and reproductive success of the fishes so that comparisons can be made before and after addition of heated effluent. The studies will be continued for a few years after the initiation of power generation so that the overall impact of the power plant on the developing fisheries of the lake can be delineated. Such studies should point out how the fisheries of other lakes and reservoirs receiving heated effluent can best be managed. This research also should help to determine whether cooling ponds of this type are more desirable than some alternative form of dissipating condenser waste heat.

Some coastal streams have already been subjected to channelization which in many cases has adversely affected fish and wildlife populations. Studies continue which are aimed at the protection of productive waters like that pictured below.



Channelization

The devastating effects of stream channelization on fisheries has been well documented. If drainage and/or flood control is required in certain areas, there may be better ways to accommodate proper runoff without the harsh effects dealt fish and wildlife, as exhibited by many past projects.

Research is being conducted to determine the effects of a particular type of stream channelization on existing fisheries. The criteria of stream modification being used by the Onslow County Health Department on several small coastal streams appears to differ enough from standard channelizing methods, that a thorough investigation may show it to be an acceptable method of relieving serious drainage problems.

Lakes and Ponds

Fish population sampling methods commonly used include electrofishing, seining, trawling, fyke netting, gill or trammel netting, and creel census. Common problems involved with sampling are

selection of the sampling season, water level fluctuations, vegetation, and/or turbidity.

Sampling techniques and creel are both size and species selective. Using sampling methods to identify creel data is considered unreliable, since the effectiveness of each device varies with uncontrollable sampling problems. Sampling is indicative of fishes which are available, and creel represents fisherman utilization of these fishes.

Previous data on a small piedmont lake revealed improved catch rates for sunfish around bundles of old tires as opposed to unsheltered lake areas. Since 1972 more than 300 fish attractors (groups of old tires) have been installed in lakes. The purpose of the tire bundles is to concentrate fish for improved angling. The tires are cut to insure rapid sinking, and the areas are marked to encourage fishermen usage. Lake wardens at various lakes report good fishing for sunfishes, crappie, and catfish in the vicinity of many of the fish-attractor sites. These species not only are abundant in most lakes but may be overpopulated. However, anglers appear reluctant to use the fish attractors due to difficulty in locating the areas or lack of knowledge as to their purpose.

A study was conducted on a large reservoir to determine proper attractor design and depth necessary to attract fish of differing species, numbers, and sizes. A total of 396 tires was used in the construction of 18 fish attractors installed at depths of four, eight, and twelve feet. Each depth was represented by two different tire arrangemnt designs (random and circular) and three attractor sizes (11, 22, and 33 tires). Although data has not yet been computer analyzed, field observations indicate that 1) a much greater concentration of fishes were present around tires than sites with no cover; 2) the most abundant fishes present were bluegill, warmouth, bullheads, white catfish, and shad; 3) very large numbers of tires (fresh-water reefs) should be effective in concentrating adequate numbers of fish for angling. Two freshwater fishing reefs were installed each in Badin Lake (154 to 237 tires) and Mountain Island Lake (120 to 132 tires). Plans also are being made to construct a large reef in Gaston Lake. Signs indicating location of fish attractors will be installed.

Weed Control

Excessive growths of aquatic vegetation commonly occur in small lakes and ponds and may greatly impair fishing. Abundant vegetation tends to foul hooks, protect forage fish from predatory species, tie up valuable nutrients in forms which most fish cannot assimilate, and make fertilization impractical. Present techniques for vegetation control often are laborious, expensive, and inadequate in the amount of control they provide.

In an effort to achieve better control of vegetation in small impoundments research is being conducted to discover the most effective methods of combating this problem. One study concerns control of an infestation of duckweed in White's Mill Pond in Halifax County. Much effort has been directed toward removing the duckweed physically by water level manipulations and chemical treatment with 2,4-D. Both of these techniques have been only partially successful and alternative methods now are being investigated. Another study concerns the use of non-toxic dyes in ponds to shade out submerged vegetation. Selected dyes are introduced into ponds at rates which successfully reduce the penetration of sunlight to levels below that required by submerged plants for growth. This technique has provided partial control of submerged vegetation in experimental ponds. However, the relatively high cost of the dyes used may prohibit widespread utilization of the technique.

Reservoirs

Forage Introductions

The threadfin shad was first introduced into the Lower Yadkin-Pee Dee and the lower Catawba River reservoirs in the early 1960's. Excellent forage supply consisting of all sizes of shad now exists which generally has resulted in improved growth and/or increase in production of the fish populations, especially white bass, crappie, and largemouth bass.

Threadfin shad stockings have become an annual management tool on many other reservoirs where food supply is insufficient. Adult threadfin are stocked in the spring and their offspring provide an abundant food supply which can be utilized by both large and small predator species, such as white bass, crappie, and largemouth bass. A total of 182,000 threadfin adults have been stocked in 37 small lakes and reservoirs mostly in the Piedmont and Mountain areas from 1971-1973. In most instances these stockings have been successful in providing a supplemental forage supply. They often result in general improvement in predator fish populations.

Fish attractors, constructed of old automobile tires, are placed in lakes where noticeably higher catches of various sunfishes have resulted. These attractors are marked with buoys.

Predator Introductions

Previous predator introductions consisted primarily of introductions of walleye and white bass in Yadkin-Pee Dee and Catawba reservoirs in the early to mid-1950's. After suitable forage was supplied the white bass stockings became very successful. They are now an important game fish and contribute significantly to the sport fish harvest. Recent predator introductions have been directed toward better utilization of the abundant populations of threadfin shad and gizzard shad.

Striped bass were stocked in Badin Lake and Lake Norman, walleye were stocked in Lake Tillery, and white bass were stocked in Lake Thom-A-Lex and Lake Gaston.

Information gathered from 32 lakes will be used to determine ecological factors influencing success of predator fish introductions and to evaluate the effects of an introduced predator fish on existing fish populations and sport fisheries of warm-water reservoirs.

Flathead catfish were stocked in Lake Norman and in several other locations. The results of these stockings have not been fully evaluated. A fishery does exist for flathead catfish above High Rock Lake, and these fish are occasionally caught in other locations on the Yadkin River. Flatheads grow very rapidly and several weighing nearly 40 pounds have been observed. A study is underway to determine the feasibility of utilizing flathead catfish as an auxiliary predator on unbalanced fish populations.

Harvest Determinations

In order to manage and conserve fishery resources, it is often necessary to determine the harvest and rate of exploitation of selected sport fish populations. This data is needed badly for the development of regulations which will permit the optimum harvest of our resources without depleting the breeding stock. Also, harvest determinations are valuable in assessing the success of various management techniques, such as the introduction of new fish species.

At the present time, a creel survey is being conducted at Badin Lake. This study is primarily concerned with evaluating striped bass stockings and obtaining harvest estimates of the lake's sport fishes. The creel survey is accomplished by randomly selecting one-half day periods and interviewing all anglers encountered during these periods. Results obtained thus far indicate that the striped bass stockings have been successful as this species makes up approximately two percent of the total fish harvested from Badin Lake. Largemouth bass, however, make up 27 percent of the total weight of all fish harvested—the greatest contribution of any one species.

Harvest determinations also are being made on several smaller lakes. Most of these are municipal water supply lakes which receive relatively high amounts of fishing pressure. Anglers, upon completing their fishing trips, are interviewed daily in order to determine angling quality and harvest. Data obtained are used in formulating management programs for the individual lakes. Angler interviews indicate that the fishing pressure for largemouth bass is very heavy on these lakes and that largemouth bass comprise a large percentage of the total weight of fish harvested.

River and Warm-Water Streams Striped Bass

In 1970 a program was initiated to study the striped bass populations in the Tar and Neuse rivers. The primary objective of this study is to make recommendations conducive to the enhancement of the striped bass populations in these two river systems. Studies are also underway to determine the movement of stocked striped bass. Hatchery-reared striped bass are tagged and released into the Tar and Neuse rivers at different times of the year and in different locations on the rivers. Tag returns will provide information on downstream movement and, information on the effectiveness of striped bass stocking into an open river system.

Redbreast Sunfish

Research investigations have been conducted for the past eight years in order to learn more about the life history and habitat requirements of this species.

Through the collection and evaluation of various data we now are able to better manage the redbreast fisheries of North Carolina. The most productive redbreast populations are associated with the Coastal Plains streams and areas with natural physical obstructions. The Division of Inland Fisheries currently is conducting research using various forms of artificial physical obstructions on selected Coastal Plain streams in order to improve redbreast sunfish habitat and consequently provide more productive redbreast fishing. The redbreast sunfish is the most sought game fish in southeastern North Carolina.

Roanoke Bass

Fingerling and adult Roanoke bass in previous years were stocked in Mountain Creek (Richmond County) and Rocky River (Chatham County), while only adults were stocked in Uwharrie River (Montgomery County). Since then, annual sampling of these streams has been conducted to determine the success of the introductions. The only recoveries, thus far, have been from the Rocky River, where adult fish have been captured. A fish kill on this river in 1973 gave further, excellent evidence of survival of the relocated Roanoke bass. No conclusions about reproduction can be made to date.

Lake Norman

The North Carolina Wildlife Resources Commission is charged with the responsibility of managing the fishery resources in inland waters. Inasmuch as scientific data must be obtained to make wise decisions for the proper management of the total fishery resources, the Commission has required commercial catfishermen to report their catches from Lake Norman.

Commercial catfishing in North Carolina is an established enterprise but the effects of commercial fishing in the inland waters are relatively unknown. Published literature on this subject reveals conflicting results; therefore, in order to obtain basic biological data relating to commercial catfishing in the reservoirs of North Carolina, a pilot study of harvest rates was initiated in Lake Norman.

Lake Norman, a 32,000-acre Duke Power cooling lake, was impounded in 1964 and not open to catfish trapping until 1973. Other reservoirs have experienced catfish trapping for 25 years or longer.

Although the data are not complete, preliminary analysis of the data collected from Lake Norman indicates that two percent of the licensed catfishermen catch 98 percent of the catfish. Commercial catfishermen, as opposed to sport catfishermen, fish about 10 traps per day and catch about two

pounds of dressed catfish per trap per day.

Commercial fishermen have harvested about 44,500 pounds of dressed catfish from Lake Norman since the mandatory harvest reporting started in 1973.

A voluntary harvest report from Badin Lake, where catfish traps have been legal for a number of years, showed 13,700 pounds of dressed catfish caught in 1973.

Until this harvest study of catfish was initiated, no one knew the harvest of catfish by commercial fishermen in Piedmont reservoirs. From this study, a more orderly and sound management program for the fishery resources of the state can be initiated.

Hatchery Section

A majority of the efforts in the hatchery section is aimed at producing and stocking the species, numbers and sizes of fish requested by the district fishery biologists for their management and research programs. All of these programs are designed to develop a new fishery, or to improve an existing fishery. Some programs, such as the stocking of catchable sized trout, demand continual production and stocking but provide immediate benefits to the angler. Other programs provide benefits which may take years to realize but will be self-sustaining once established. The long-range programs are exemplified by the stocking of striped bass and muskellunge.

Presently the hatchery section operates four trout hatcheries, two warm-water hatcheries and a striped bass hatchery to meet current management needs.

The four trout hatcheries are located as follows: Armstrong Creek—15 miles northwest of Marion off Highway NC 226A, Marion—3 miles north of Marion off Highway NC 221, Roaring Gap —10 miles southeast of Sparta on Highway US 21, and Waynesville—10 miles southwest of Waynesville on Highway US 23. The State's production of catchable-size trout is matched by the federal government through a cooperative program. The two warm-water facilities are Table Rock Hatchery, located 9 miles northwest of Morganton off NC 181 and Fayetteville Hatchery, located 10 miles southwest of Fayetteville on US 401. The two hatcheries raise a variety of warm-water species. Most warm-water fishes are spawned in the spring and are stocked out as fingerlings during the summer and fall. The numbers and species stocked vary each year dependent upon requests from district fishery biologists. Here again a cooperative program with the federal government is in effect, and they provide additional warm-water fish for stocking each year as needed. The striped bass hatchery at Weldon is operated for six weeks during the natural spawning run of striped bass in the Roanoke River. Hatchery procedure is to salvage eggs from a striped bass provided by the local sports fishermen. The eggs are hatched at Weldon and either are stocked immediately as sac fry or shipped to Fayetteville, Table Rock, or to other cooperating State or Federal wildlife agencies to be reared to fingerlings.

Fish distribution figures for the biennium are available on request.

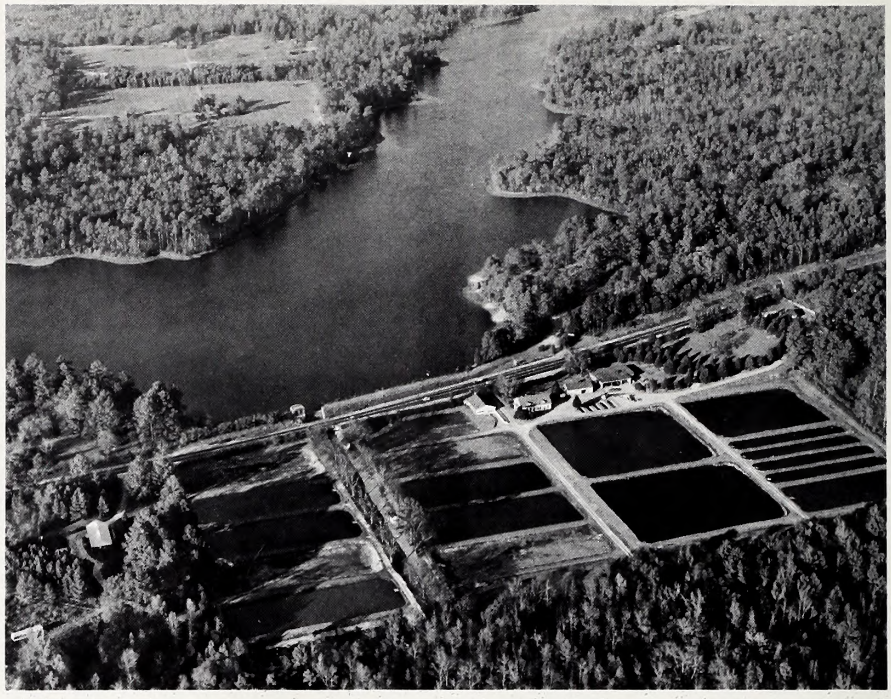


PHOTO BY REX G. SCHMIDT

Many of the fish hatcheries serve the dual role of fish producers and research stations. Thus, facilities are used more efficiently the year round. This is the Fayetteville hatchery, west of the town of Fayetteville.

Hatchery Section Research Activities

Presently the production section is conducting only a limited amount of research which is concentrated in the field of holding and utilizing our own broodstock instead of depending on other state and federal hatcheries for eggs and fry. If we can maintain our own broodstock, this will insure that we have the quantity and quality of eggs that we need to maintain our trout and warm-water stocking programs.

We have utilized our own rainbow, brown, and brook trout broodstock for a number of years. Current research to find the best diet for our brood fish along with improvements in egg-taking procedures, disease control, and general handling, will help us to bring this program up to the desired level.

Also some research with warm-water broodstock is underway as we are holding muskellunge in a hatchery reservoir to see if they will mature and if they can be spawned successfully and then raised to a stockable size. The development and use of our own sources of warm-water broodstock will continually receive more attention in the future because of the variety of species available and the increasing emphasis on warm-water fisheries.

In addition to the above-mentioned broodstock research being conducted by the hatchery section, the district fishery biologists are assisted in various research projects. Those projects in progress are (1) the transfer of forage fishes (blueback herring, threadfin shad and alewives) and (2) the holding and care of experimental hybrid sunfishes, flathead catfish, brook trout and various strains of largemouth bass.

DIVISION OF PROTECTION

The efforts of Division of Protection were toward the Commission's long-standing policy of fair and impartial enforcement of all laws within its jurisdiction. Effort was directed toward those who wilfully steal from others or who endanger others through violations of laws. Deer spotlighting became a much more prevalent violation, requiring an increasing amount of enforcement effort.

Personnel

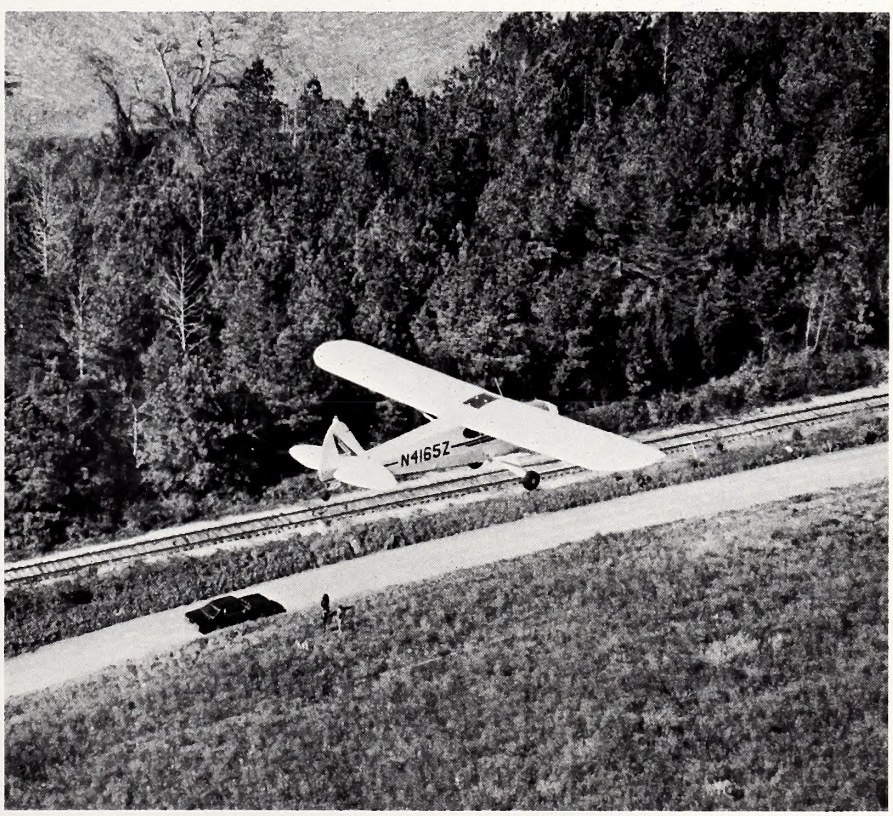
The position of Pilot-Supervisor was changed to Assistant Chief (Inspection and Training) and a new Wildlife patrol Pilot was added. The position of Assistant Chief was changed to Assistant Chief (Administration). These changes permitted better contact by the Raleigh staff with field personnel, increased the use of aircraft in enforcement activities and permitted expansion of the Division's personnel training program. Division strength was 191, of which 189 were enforcement officers and two were clerical. All officers are now certified as North Carolina enforcement officers by the N. C. Criminal Justice Training and Standards Council.

Training

A major improvement in the Division was consolidation and expansion of its enforcement training program. This training, conducted through facilities of the Institute of Government, University of North Carolina, combined the former four weeks of inservice training with new courses considered necessary to a good officer and with additional courses made necessary by certification requirements of the North Carolina Criminal Justice Training and Standards Council, to a total of nine weeks training given an officer during his first year of employment. This, with the three-week pre-service school, now provides 12 weeks of training to the recruit officer.

Equipment

Another aircraft was added to the Division's fleet of four. The additional aircraft, another PA-18 Supercub, was purchased from another state agency at a very nominal cost. This, with the addition of a patrol pilot, has made the Division staff more able to meet the increasing demand from the field force for more aircraft assistance. Increased use of the Police Information Network terminal in the Division office has improved communication with the field force, providing needed data in minutes that formerly required hours or days for transmission. The PIN terminal is also permitting our officers to serve the public in new ways, particularly in the detection and recovery of stolen firearms.



Modern crime detection methods are among the multitude of subjects taught at the Institute of Government during periodic schools held for wildlife protectors. Below, the use of aircraft continued to be of great assistance in patrolling all areas of the state. Radio communications direct wildlife protectors to any observed or potential hunting and fishing law violations.

PHOTOS BY REX GARY SCHMIDT

Field Operations

The following tabulation of data will show the magnitude of the Division's enforcement activities during the biennium.

Biennium 1972-74

Number hunters & fish-

ermen checked	867,559	
Number of violations	22,811	
Violation rate		2.62%
Number of convictions	21,817	
Conviction rate		95.64%
Number of boats inspected	209,832	
Number of violations	7,098	
Violation rate		3.38%
Number of convictions	6,701	
Conviction rate		94.41%

Hunter Safety

The North Carolina Hunter Safety Program progressed tremendously during this period with 37,052 students trained and 1,276 volunteer instructors certified. North Carolina's Hunter Safety Program was rated by the National Rifle Association in the top ten in the United States and Canada in 1973.

The purpose of the Hunter Safety Program remained the same: To enhance the safety and well-being of firearm users and all citizens in the safe use of firearms, including home safety and the avoidance of accidents and hazards associated with hunting; and by providing additional instruction on related matters including survival techniques, first aid, sporting ethics, principles of wildlife management and the proper use of archery equipment. The objective is to train every juvenile who is a prospective hunter. In many areas the program was included as part of the curriculum in the public school system, colleges and universities.

Information compiled from the Hunter Safety Casualty Reports revealed problems causing accidents in the field — most recent being colors of clothing worn by the victims and mistaken identity. A need was indicated for more instruction relating to clothing coloration. As a result, a slide series on this subject was developed. A series of slides relating to information on hunting accidents with bow and arrow was also developed.

In 1973 there was a 40 percent decrease in total hunting accidents, but there was a total of 15 fatalities. A study of these accidents showed that not one of the shooters had any formal training in firearms safety.

Students received a minimum of six hours' instruction plus first aid when time permitted. When time allowed, survival techniques were also included, with sporting ethics a definite part of all instruction.

PHOTO BY JIM DEAN

Although it is often listed as "routine patrol," few days in the life of a wildlife protector are completely uneventful. These men are trained to deal with any situation which may arise. Hunter Safety Officers and volunteer instructors (below) are active in teaching safe gun handling and similar subjects to youth groups over the state.

PHOTO BY LUTHER PARTIN

Principles of wildlife management was taught at the beginning of each class.

Summary

The reassignment of staff personnel, the greatly expanded training program, the additional and improved equipment and the improved utilization of present equipment are all improving the Division's effectiveness and efficiency. The Division strives to give the public an unexcelled program of enforcement of hunting, fishing and boating laws.

DIVISION OF GAME

The Division of Game is charged with the responsibility for management of wildlife populations and habitat in North Carolina. In accomplishing this assignment the Division collects information on the status of wildlife populations, analyzes this data, and makes recommendations for sound regulations to insure an adequate harvest of game species within the breeding capacity of the species. It manages habitat on public game lands to increase wildlife populations. It offers technical assistance through its extension activities to those who desire information relating to improving game habitat. It is responsible for stewardship and protection of upland and wetland habitats to prevent destruction through callous land use practices.

Game Lands Management

Over one and one half million acres of land are open to public hunting under the Wildlife Commission's game lands program. Game lands are located in all sections of the state and provide a cross-section of all types of hunting available in North Carolina. In addition to hunting license requirements, users of the game lands must have a $6.00 game lands use permit which is valid on any game land thoughout the entire season. One-half of the revenue received from these permits is paid to the landowners, the other half is used by the Commission for protection and development for improved hunting and fishing. The Commission also posts the boundaries for field identification and prepares maps to aid hunters in locating the game lands.

Games lands are classified into three different types, based on species available and hunting time. "Doves only" areas are portions of actively operating farms that are managed for dove hunting and open to hunting three days per week (Monday, Wednesday and Saturday) for doves only, during the dove season. The three-day limitation is required for two reasons: (1) to hold interference with farming operations to a minimum, and (2) to keep from "burning out" the dove fields by overshooting.

"Any game" three-day per-week areas are also located mostly on actively operating farms but two Commission-owned tracts — Sandhills and Caswell—are also in this group.

Wildlife management practices conducted on Game Lands include seeding of logging roads (above) with grasses which serve to hold the soil and provide forage for deer and small game. Small clear-cut areas like the one shown below on the Pisgah Game Land, soon regenerate with plants that serve as deer foods. The location and extent of such areas must be carefully considered.

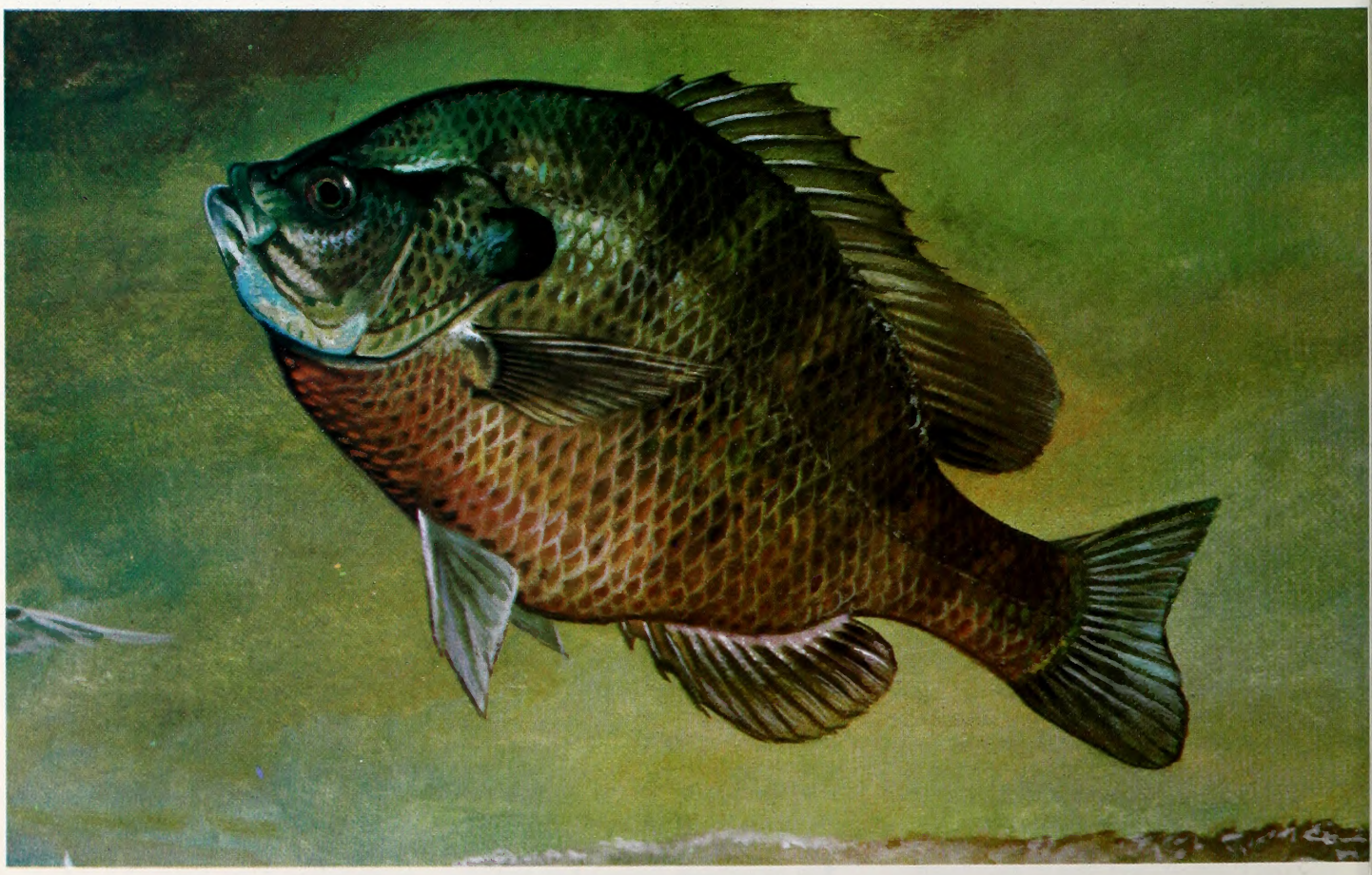
PHOTOS BY JIM DEAN

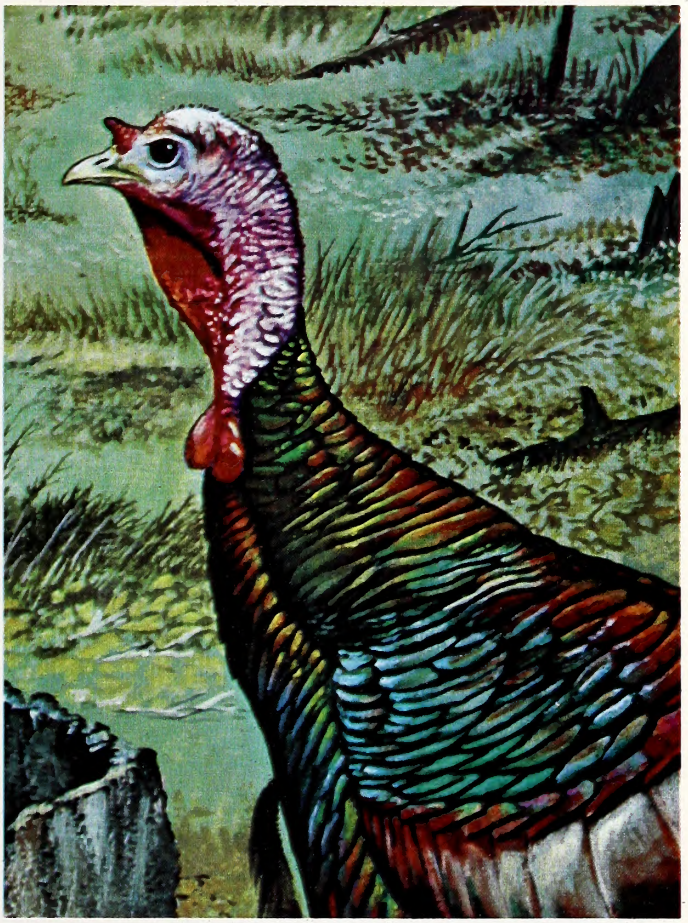
Several of these areas have been developed for dove hunting, and the Sandhills Game Land has annually hosted hundreds of hunters who have taken over 10,000 doves in some years.

The remaining game lands, which comprise the bulk of the nearly 2,000,000 acres, are open six days per week. All species of game may be hunted during appropriate seasons, with minor exceptions as stipulated in the regulations.

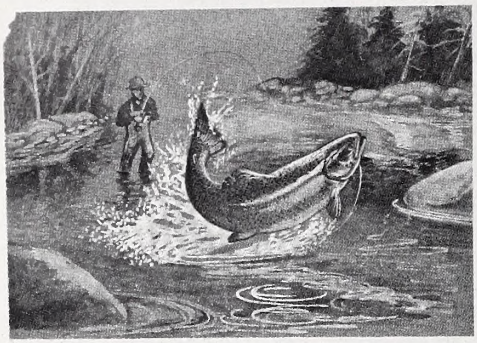
• **continued on page 21**

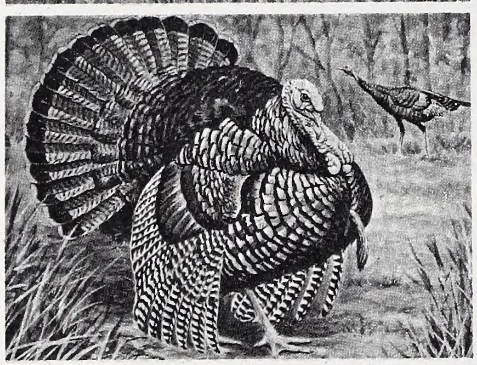
MORE SPORT F
WITH EQUAL OPP

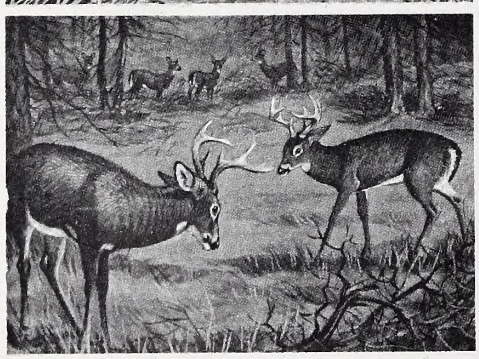




R MORE PEOPLE
RTUNITY FOR ALL







1974-75 Hunting and Fishing Maps for North Carolina Game Lands

Wildlife

North Carolina
Wildlife Resources Commission
Division of Game
Raleigh, North Carolina

The preparation and updating of this map book required considerable time during the biennium. It has proven very helpful to Tarheel sportsmen.

PHOTO BY JIM DEAN

Deer have been utilizing this growth on a small clear-cut area. Providing adequate food for wildlife often needs attention.

Over 72,000 hunters bought permits to hunt and fish on game lands during the 1973-74 season. A mail survey of their activities indicated they expended a total of 503,896 man-days of hunting and bagged a total of 274,362 head of resident small game and 7,447 head of big game.

Wildlife Services

The Wildlife Resources Commission has always recognized that the annual crop of game is largely produced and hunted on privately-owned property. To assist in producing maximum game populations and providing good hunting, the Commission has had an upland game restoration project designed to accomplish these results. Landowners and sportsmen are provided technical assistance in planning and developing suitable wildlife habitat on farms and other game-producing lands. This approach to more game and better hunting has proved to be the only practical method resulting from many years of trial and error. Techniques used in maintaining suitable wildlife habitat on farms and other land are geared to complement and supplement soil and water conservation efforts, and to blend with the principal production goals of the landowners.

During the biennium, the Services Section of the Commission's Division of Game continued at an accelerated rate its effort to achieve top production and full use of the harvestable surplus of game on privately-owned land. This effort involved providing 537 man-days of technical assistance in planning wildlife habitat development programs and solving wildlife-related problems. These services were provided by a staff of nine district wildlife biologists, operating from headquarters located in each of the nine Commission Districts. Plans developed by the biologists ranged from the preparation of comprehensive, long-range game management programs for large land holdings to advice on manipulation of cropping and other land use practices which would benefit wildlife on the average family-size farm.

In an effort to maintain good wildlife populations, the following amounts of special game food and cover planting materials were produced and distributed free-of-charge to 10,628 cooperating landowners and sportsmen: 2,646,000 shrub lespedeza seedlings; 16,053 two-and-one-half-pound planting units of a perennial seed mixture; 56,650 five-pound units of annual seed mixture, 2,433 two-and-one-half-pound planting units of reseeding annual seed mixture and 3,248 two-pound units of sericea lespedeza. In addition to these standardized materials, several thousand seedlings of autumn olive, sawtooth oak, French mulberry, and other promising wildlife food producers were distributed to landowners for further field tests prior to the initiation of volume production in the nursery operation.

The provision of hunting opportunity for urban hunters was a feature of the Services Section program. Special dove hunting areas totaling around 4,500 acres and all-species hunting areas totaling around 23,000 acres were leased at locations near population centers each year of the biennium. They were developed by planting dove attractants on the farms designated for dove hunting only, and by establishing game food and cover plots on the areas where hunting for all species was allowed. Hunting on all of the areas was restricted to Mondays, Wednesdays, Saturdays and national holidays that occurred during the statewide open hunting season.

Biologists in charge of these areas conducted frequent checks to determine levels of hunter use and hunting successes. Their reports indicated heavy hunter use of the dove areas and excellent bags during the early part of the season, with hunter participation diminishing as the season progressed and

This gleaner-harvester gathers seeds for packaging and distribution for wildlife food plantings. Pheasants were live trapped on the Outer Banks, banded (right) and relocated on various game lands.

PHOTO BY SAM WISEMAN

the birds migrated southward. On the areas where all game species were hunted in season, moderate to heavy hunting pressure and satisfactory harvest throughout the season were reported for most areas. Post-season investigations revealed no over-harvest of resident game species.

A total of 136 wild ring-necked pheasants were live-trapped on the Outer Banks and relocated on the Pungo National Wildlife Refuge in Washington and Hyde counties, the Scuppernong Game Lands in Washington County, and Camp Lejeune Marine Base in Onslow County. It is hoped that pheasants may be able to extend their range in North Carolina. Evidences of several broods of young birds have been reported, and sightings of adult birds are rather common in and around the release areas.

Additional responsibilities of the Services Section included supervision of licensed controlled shooting preserves, screening applications for permits to sell pen-raised game birds for food purposes, supervision of a raccoon transplanting project and supervision of a program designed to provide artificial nest boxes for squirrels and wood ducks.

The cooperative raccoon relocation project was conducted under the supervision of a wildlife biologist. During the biennium, 871 raccoons were taken from localities in the east where they had increased to abundant levels and distributed, through organized sportsman groups, in understocked western counties. The Commission reimbursed the sportsman groups one-half of the cost of the raccoons.

The Game Services Section supported the construction and erection of 1,162 squirrel nest boxes and 248 wood duck nest boxes by reimbursing individuals and groups at a rate of $2.50 per box for those properly constructed and erected in areas where additional nesting structures were needed. Field biologists inspected each such box before reimbursement was made.

Wildlife Investigations

Wildlife investigations are designed to develop and evaluate new management techniques, to determine the game harvest and hunter characteristics, to study the biology of game species for more effective management and regulation, and to evaluate the impact of deleterious land-use practices on the wildlife resource.

Wood ducks and other waterfowl were live trapped and banded to gather data on their movements, survival and possible harvest information.

The waterfowl segment involves banding waterfowl to gain information on their survival and movements. Personnel banded 3,897 waterfowl during the 1972-73 banding period and 470 in 1973-74. Waterfowl aerial surveys were conducted in major North Carolina wintering areas.

Harvest information places the wood duck as the number one species, comprising over 25 percent of the waterfowl kill in North Carolina. Mallards were second in order of importance.

As the public concern and demand for wise resource management and protection against environmental degradation continues to increase, plans for minimizing and mitigating the deleterous effects of many projects on the wildlife resource must be developed. The Wildlife Resources Commission has the responsibility of work-

Bait treated with harmless tranquilizers is used to capture turkeys for relocating to suitable areas of the state. Blinds are constructed (left) so that the turkeys can be observed taking the bait and then the affected birds can be quickly picked up and carefully crated for transporting.

ing in behalf of the state's sportsmen to insure adequate attention to protecting and enhancing wildlife values coincident with various development projects.

North Carolina's wild turkey restoration efforts are directed at restocking the vast mountain areas with live trapped, wild turkeys. Large releases of these wild, trapped birds over short time periods in good turkey range have resulted in successful stockings. There is cause for optimism regarding the wild turkey's future in western North Carolina. However, the continued reduction of suitable forest range in the Piedmont and Coastal Plain of the state is cause for concern about the turkey's future in these regions.

To protect this superior game species, North Carolina has modified the turkey regulations to feature spring gobbler hunting, which has no effect on turkey numbers. A mandatory tagging requirement

Some 1,200 Wildlife Cooperator Agents are active over the state. These volunteer individuals collect data on reported big game kills. This information is helpful in developing game management plans.

PHOTO BY JIM DEAN

is in effect for all successful spring gobbler hunters. The release of pen-raised stock is now prohibited in North Carolina. Surveys conducted during the spring gobbler seasons indicated that about 94 gobblers were taken in 1973 and 97 in 1974.

Game lands personnel include four supervising biologists and twelve three-man development crews. These with the aid of locally employed labor assistants were responsible for the arduous task of locating and posting the boundary lines of the game lands, plus the boundaries of 26 large areas which have been designated by regulation as bear sanctuaries closed to bear hunting.

Other development activities included planting and maintaining deer pastures and other wildlife food-producing acreages; the construction and maintenance of roads and trails for hunter access; controlled burning for game food production and wildfire control; and water level management for habitat improvement for waterfowl.

Financial assistance in the purchase, leasing and development of game lands was received under provisions of the Federal Aid In Wildlife Restoration Act.

Much attention and emphasis is being placed on the black bear in North Carolina. A comprehensive, long-term study on the biology and management of this trophy game species has revealed much insight into the basic requirements of the black bear and the regulations necessary to protect an adequate breeding stock to provide overflow for hunting. Twenty-eight sanctuaries established to protect a breeding nucleus to provide a harvestable overflow are currently being evaluated by a radio-telemetry study of the cruising radius and home range of the black bear.

A mail survey of North Carolina hunters was conducted following the 1972-73 season. In terms of numbers of hunters, squirrel, rabbit, and deer, respectively, rank as the most important North Carolina game species. In terms of man-days of recreation the importance ranking is squirrel, rabbit, deer in that order. The mourning dove was by far the most abundant species in the North Carolina hunter's bag with an average of 4.3 doves per trip; quail were second with 2.1 quail per trip; and squirrels third with 1.6 per trip.

Another mail survey was con-

Wild Turkey Restoration
July 1972 - June 1974

Area Stocked	Date	Male	Female	Total
1. Madison County Mill Ridge	August and September, 1972	13	12	25
2. Mitchell County Pigeonroost	January through March, 1973	6	9	15
3. Wilkes County Thurmond Chatham	March 1973	2	2	4
4. Caldwell County Boone Fork	September 1973 March 1974	6	8	14
5. Randolph County Burkhead Mountain	March 1974	4	6	10
6. Craven County Pinecliff	March 1974	4	6	10

PHOTOS BY REX G. SCHMIDT

Quail are important game birds in North Carolina. According to a mail survey, slightly more than two quail were bagged per average trip during the 1972-73 season. Below is the new horse barn for the Laurinburg field trial facilities.

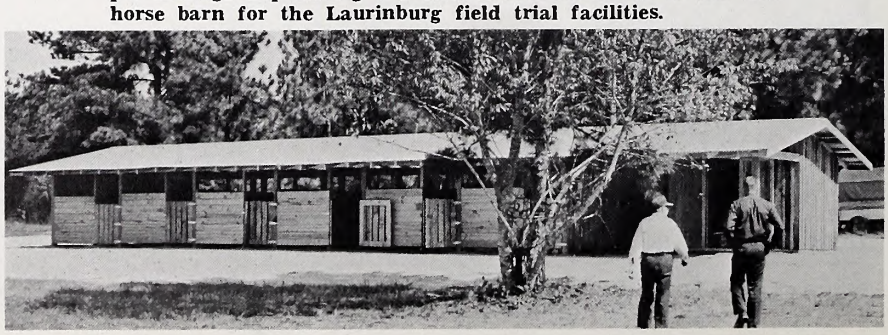


PHOTO BY DAVID SMART

Studies continued on the black bear and its habitat. Forestry practices designed to complement the game management program included careful replanting of areas where timber had been harvested.

ducted following the 73-74 hunting season; this survey was designed to evaluate the Game Lands concept of furnishing public hunting opportunity. Several interesting and informative facts were revealed by the response of game lands hunters who were sampled regarding their hunting effort and kill. The tabular results of this mail survey by game species are given in the Game Lands Management Section. Following is a listing of the most pertinent findings of this survey.

1. Of the 72,652 Game Lands Use Permits reported through February, 1974, 50.2 percent were purchased for both hunting and fishing, 47.2 percent were purchased for hunting only, and 2.6 percent were for fishing only.
2. A total of 58,350 hunters or 80.3 percent used their permits on game lands in 1973-74. The other 19.7 percent did not hunt on game lands for one reason or another.
3. The 58,350 game lands hunters spent a total of 503,896 days hunting 14 game species. This represents an average of 8.6 days of hunting for each permit user.
4. The major game species hunted on Game Lands during the 1973-74 season was deer. A total of 49,182 deer hunters spent 276,310 days hunting deer and harvested 6,875 deer on Game Lands. These 49,000 deer hunters represent about 33 percent of the total number of deer hunters in North Carolina; therefore about one out of every three deer hunters in North Carolina does some portion of his deer hunting on game lands. On the average, the game lands deer hunter went deer hunting 5.6 times and harvested one deer per 40.2 deer hunter-days. One game lands deer hunter out of every 7.2 was successful in bagging his deer during the season.
5. Squirrel hunters were the second most common among game lands hunters. Some 15,993 squirrel hunters spent 73,333 days in harvesting 139,297 squirrels from game lands—an average of 8.7 squirrels per hunter and 1.9 squirrels per trip. The average squirrel hunter spent 4.6 days hunting on game lands.

INTERAGENCY WILDLIFE COOPERATION

The importance of interagency wildlife coordination took on a new meaning and urgency during this biennium. Work that had been carried on by the Assistant Director for Field Operations with the help of one part-time consultant expanded rapidly during the last year and public concern became evident through letters, phone calls, and consultations.

In the last half of this period this effort was divided between the growing pressure to keep abreast of changing needs and hurried, but careful, planning of a section in the Director's office to strengthen and broaden the Commission's conservation efforts. The move was also essential to meet reorganization changes of the Department of Natural and Economic Resources, the agency which was established to coordinate and further land and water development in harmony with environmental preservation.

Near the end of the biennium an organization plan was in the final stages. This plan provided for a Section Chief, Assistant Chief, two field biologists and a part-time consultant. It also called for the positions to be filled by August 1, 1974.

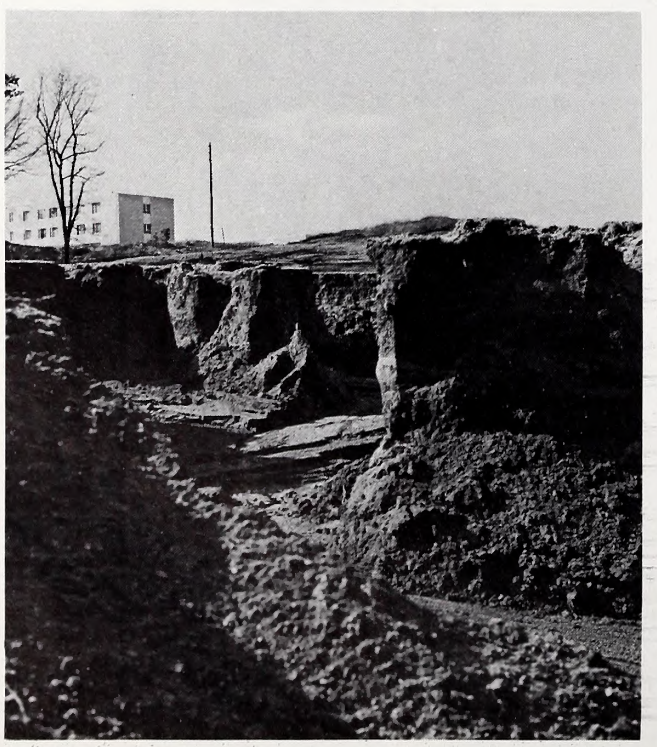
The new section staff will work closely with the Commission's five divisions in carrying on an active program of interagency coordination of wildlife conservation. The staff will also provide a greater degree of liaison with other agencies — local, state, and federal — on matters requiring coordination.

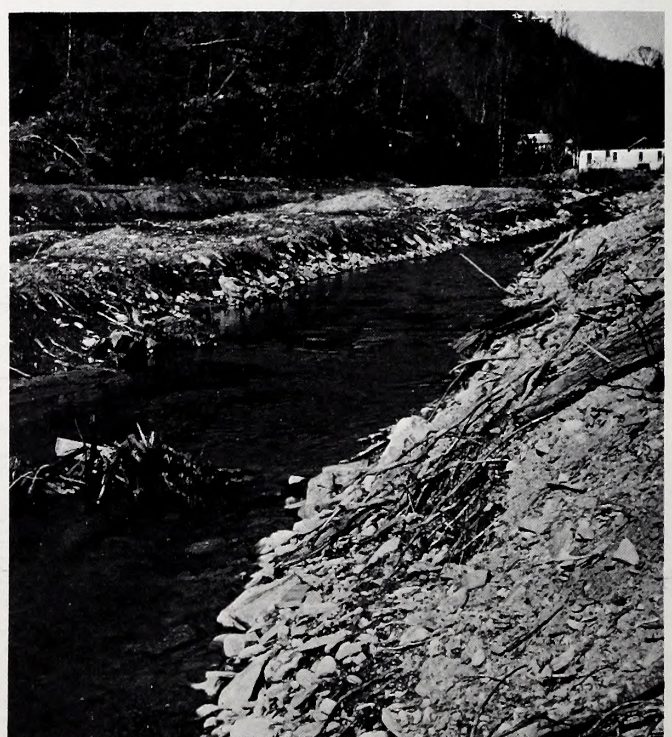
In planning for this development, consideration was given to the impact of this program through the land-use planning progress with its first objective the development of base-line information on wildlife resources in the 20 coastal counties for use in formulating the land-use plans required by the Coastal Area Management Act. Field personnel already assigned to the program was making a survey of fish, game, and other wildlife resources in four Piedmont watersheds for use in evaluating anticipated environmental impact of proposed watershed projects.

In addition, proposed plans and environmental impact statements for a large variety of development projects sponsored by other agencies required evaluation to determine anticipated impact upon wildlife resources. Then suggested procedures for mitigating adverse effects upon the resources were provided. ◆

This newly formed section will examine many situations from estuaries to trout streams to see that wildlife interests are maintained.

PHOTOS BY TED DOSSETT





DIVISION OF EDUCATION

At an international wildlife conservation meeting almost 30 years ago a speaker said, "An uninformed and often misinformed public is the greatest bottleneck in conservation today."

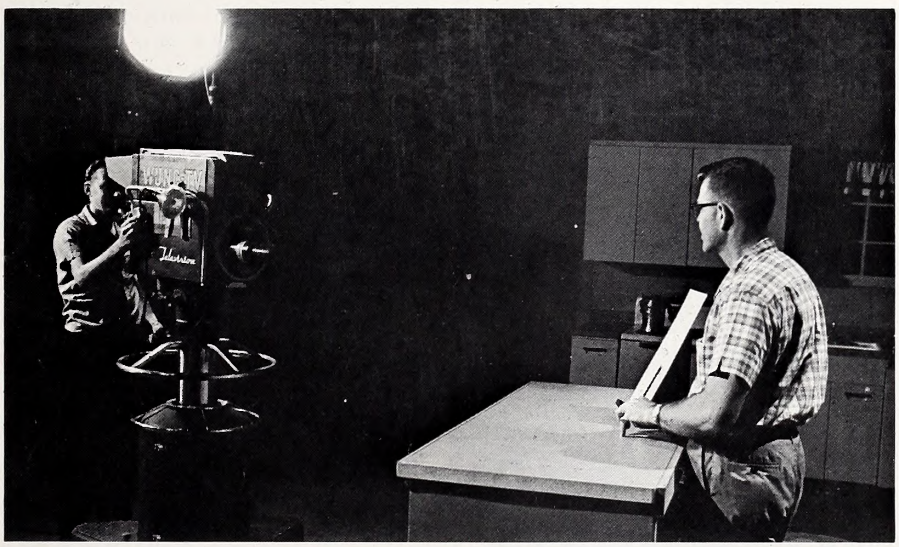
The public is much better informed and less misinformed today. The primary function of the Division of Education is to inform the public and to correct misinformation. To further this objective a reorganization of the Division on July 1, 1973, provided new priorities and production standards for educational activities.

Although the printed word is still the most acceptable means of conveying information to the public, other media are becoming important and highly successful through the use of photography for reproduction and for motion picture and television use.

Publications

Our most effective publication was WILDLIFE IN NORTH CAROLINA. During the biennium, however, it became necessary to schedule an increase in the subscription price from one to two dollars a year. This increase became necessary due to rising costs of labor, paper, printing, and postage. It was anticipated that some loss in circulation would result, and we would need to intensify sales promotion by Commission personnel with supporting publicity if we were to increase circulation in the next two years.

In addition to WILDLIFE magazine a variety of informational bulletins and publications was revised and a supply maintained to meet requests from the public. Publications range in content from



Communications through a variety of media aimed at a wide range of the public included appearances on television stations, individual instruction on taking wildlife photos, and many other outdoor oriented activities.

how to build wildlife nest boxes to popular information on various species of game and nongame animals and fish. The Division of Education also assisted other divisions by providing illustrations and helping in the preparation of publications such as Game Lands map books, hunting and fishing leaflets, and popular materials of a technical nature.

Press

Newspapers throughout the state and several periodical magazines cooperated in greater numbers in using news and other material produced by the Division. A weekly hunting-fishing-conservation news feature appeared regularly in an average of some 40 newspapers. In addition to these there were 98 formal news releases covering Commission meetings, public hearings, and various other game and fish management activities.

Photography

Increased emphasis was placed on photography. Thousands of feet of 16mm color film provided coverage of activities for use in television public service spot features and for future production of motion pictures. Hundreds of still color transparencies were made for use in developing a number of slide sets for distribution. Improved photo equipment was added to upgrade the photography, and better quality in black and white and color illustrations resulted. New equipment was also acquired for producing improved color masters and dupes for use in audio-visual programs and slide sets. Color transparencies were edited for a series of Commission program slide presentations to be used on automatic projectors using a narrative sound track. These audio-visual units served fairs, sporting equipment shows, and other functions where they attracted considerable public attention.

Continuous interim activity involved reorganizing and updating files of negatives, color slides, and prints to increase their value and add efficiency in locating needed subjects, quickly.

Radio-Television

The weekly radio program was discontinued temporarily to create and undertake an entirely new format that will feature country-style music with a conservation message. This will be programmed

Although the printed word was perhaps utilized the most in telling the wildlife story to the public, photographs also played an important part. Illustrated pamphlets were distributed by the thousands to interested people in all walks of life. Photographic missions often required the use of the Commission's aircraft.

for both radio and TV utilizing the talents of a Commission employee. Several television public service spot announcements were produced along with eight new cooperatively produced spots, and these were given wide public exposure by television stations.

Motion Pictures

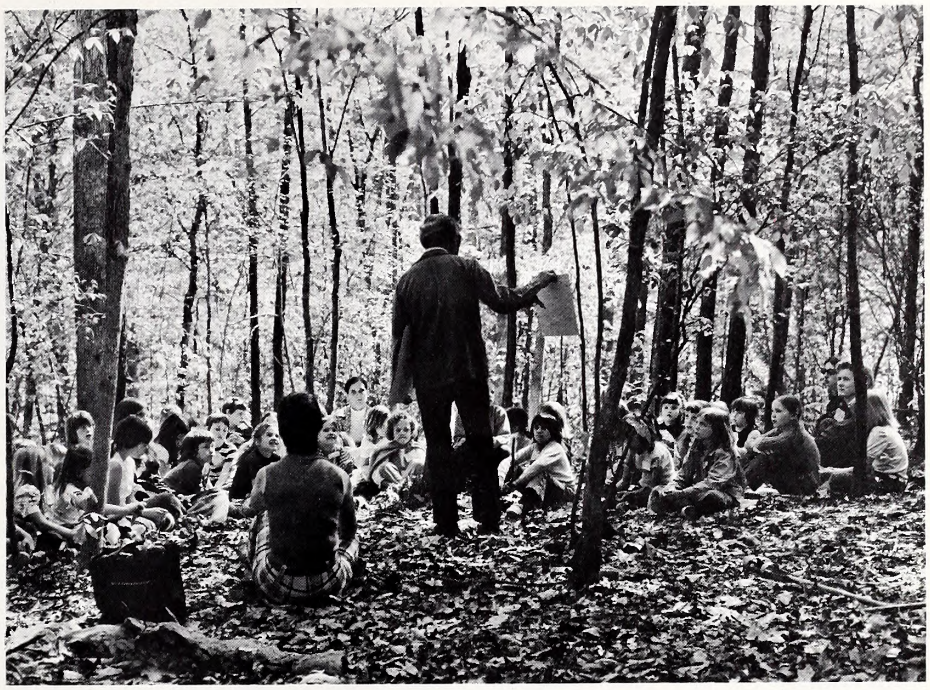
Lack of funds for replacements combined with heavy wear-and-tear from long service reduced the number of prints in the motion picture film library. Plans were made to reduce the general film circulation so that we might provide Commission personnel with better quality films for their use in schools and public meetings. The purchase of new films relating to wildlife and conservation in this area was progressing.

Education-Extension

Division personnel worked closely with public schools, Future Farmers of America, Boy Scouts, Girl Scouts, and 4-H members and officials at the planning level to facilitate establishment of wildlife conservation programs and projects, summer camps, and nature study field trips.

Wildlifer

An in-house monthly newsletter was initiated to inform Commission members and personnel of the activities carried on by the various divisions. This is entitled "The Wildlifer" and consists of news for, by, and about the "Wildlife Family" and is mailed to all employees.



PHOTOS BY REX G. SCHMIDT

The wise use of our natural resources is often best told in a natural setting (top). Many nature camps were visited during the biennium. Displays, from very simple exhibits of a few photos and posters to this collection of live fish, animals and boating safety exhibit at the N. C. State Fair, helped tell the wildlife story. Right, other agencies, both state and federal, are often contacted for assistance in reporting on wildlife stories. Here, grain has been scattered to attract game birds for photographing.

Few outdoor activities have enjoyed the steady increase in popularity experienced by recreational boating. North Carolina is one of the leading states in boat ownership with approximately 200,000 boats.

The responsibility of administering the state boat law, and making our waters safer and more enjoyable, rests with the Wildlife Resources Commission, and is shared by the Division of Motorboats and Water Safety and the Division of Protection.

Our efforts in safety have been directed at increasing and improving the services we provide to boaters. Most popular of these services is the boating access area program which provides free launching ramps on our public waters. During the biennium twelve new boating access areas were developed and opened for use, representing an investment of $91,838. Eleven of these areas were developed by division personnel and equipment, and one by contract. The new access areas are:

Conaby Creek-Conaby Creek-Washington County

Plymouth-Roanoke River-Washington County

Stumpy Point-Pamlico Sound-Dare County

Vultare-Roanoke Rapids Lake-Northampton County

Frying Pan-Frying Pan Canal-Tyrrell County

Jacksonville-New River-Onslow County

Wagram - Lumber River - Hoke County

Kinston - Neuse River - Lenoir County

Federal Point-Cape Fear River Basin-New Hanover County

Stony Mountain-Lake Tillery-Stanly County

Blewett-Pee Dee River-Richmond County

Copperhead-Lake Wylie-Mecklenburg County

On June 30, 1974, 115 free public boating access areas were in operation and a site on the Perquimans River, in Perquimans County was near completion.

The Division maintains a constant program of site maintenance and improvement, such as construction of new boarding docks, launching ramps, bulkheads and the addition of night security lights.

PHOTO BY TOM ROLLINS

The boating access area program continued to grow and included the maintenance and upgrading of existing areas (above) as well as the construction of new sites such as the Federal Point area shown below.

PHOTO BY REX GARY SCHMIDT

The Jacksonville Boating Access Area (below), was opened to the public in August, 1973 and provides direct access to the New River with its excellent fishing and recreational boating. It was developed on land leased to the state by the City of Jacksonville and Onslow County. It is an example of construction accomplished by personnel and equipment of the Division of Motorboats and Water Safety.

PHOTO BY BILL JANSEN

A major expansion in the waterway marking program was undertaken with primary emphasis on identifying water hazards and marking them with "danger" buoys, with 131 "danger" buoys and 12 channel markers installed in waters throughout the state. The installation of these waterway markers has been a valuable aid in marking our waters and making them safer.

Our stream clearance (snagging) crews were active in opening many miles of public water to boating by removing obstacles to navigation. In snagging, only the obstructions necessary to permit the passage of small boats are removed. This program is very popular with fishermen and should not be confused with stream channelization.

Boating Safety

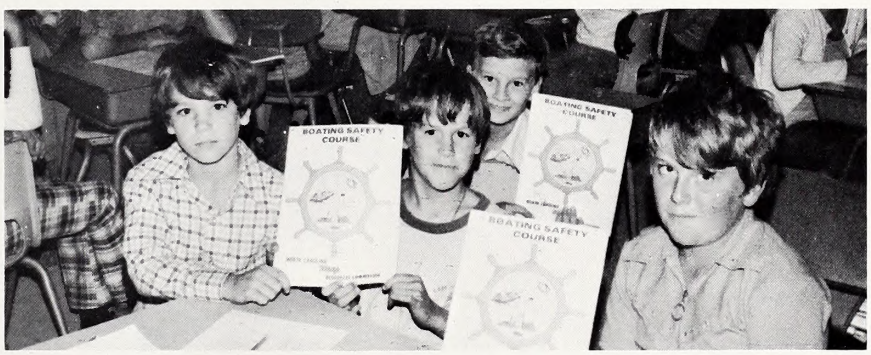
The boating safety education program was expanded with the addition of two boating safety field representatives. One of these representative is located in Wilmington (eastern) and one in Hickory (western) and they are responsible for coordinating the Wildlife Commission's boating safety programs in North Carolina and have been largely responsible for the success and growth of the program.

One of the most popular and beneficial boating safety projects undertaken by the Division has been the introduction of a safe boating course into many school systems. The course is a programmed text which students in the sixth to ninth grade levels can teach themselves the fundamentals of safe boat operation.

Twenty-five thousand copies of the course were distributed during the biennum ending June 30, 1974. Due to the costs involved and the enormity of a state-wide program, the boating courses have been primarily offered in areas of the state with the highest number of boating fatalities.

There was a marked increase in the amount of safety information provided for the boatmen. Magazine articles and news releases on items of interest to boaters were prepared. Boating safety films and booklets were purchased and made available upon request at no charge to the public. Radio and television spots, one featuring Hertford baseball star Jim "Catfish" Hunter, took the boating safety message to millions of Tarheel boaters. Division personnel designed and constructed several boating displays for exhibit at boat shows, boating events, fairs and shopping centers.

The waterway marking program was expanded and 131 buoys similar to those shown above, were placed in public waters identifying water hazards. A safe boating course was introduced into many school systems during the latter part of the biennium, and was well received.



Investigations of water safety problems and studies on the impact of boating regulations for certain bodies of water are an important part of the Division's program.

Some investigations of particular water safety problems are initiated by information received on the boating accident reports. We receive and analyze reports of boating accidents which must be submitted in case of death of an individual, incapacitation of an individual for a period of 72 hours or longer, or property damage in excess of $100. By studying those accident reports, we are able to identify situations which are likely to cause accidents, and identify certain bodies of water which have high accident rates. With this information, we can then see what type of action is required to reduce these accidents, and appropriate action taken.

Cooperative efforts in the field of boating safety with the Coast Guard, Coast Guard Auxiliary, Power Squadrons, Red Cross, Army Corps of Engineers and local water safety organizations were successful in promoting safe boating in North Carolina. This division is also working with other states in this field.

Funds for the activities of the Division of Motorboats and Water Safety are provided by the registration fees collected on motorboats over ten horsepower, from a small portion of the state tax on gasoline, and from money made available by the U. S. Coast Guard under the Federal Boating Safety Act of 1971.

Ours is a program dedicated to returning the boaters' fees in the form of services.

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

"Principles of Safe Sailing"

This 7-lesson course lasting four weeks, is being offered by Wilmington Flotilla 10-6 U. S. Coast Guard Auxiliary. Registration will be held January 27, 1975, in Wilmington at 8 p.m. Additional information about materials and meeting place may be obtained from Tom Hawkins at 791-4899; Ray Batchelor, 799-0646, or Timothy Fowler, 762-4052.

Drake Mallards Have 25-Point Value

Waterfowl hunters are advised that an error appeared in the December issue of WILDLIFE where it was incorrectly stated that under the new point system drake mallards had a value of only ten points. This should have stated that the drake has a value of 25 points. The hen mallard is a 70 point bird. The waterfowl season ends January 16.

"Boating Safety and Seamanship"

Flotilla 96, U. S. Coast Guard Auxiliary of Charlotte, begins this 12-lesson course at 7:30 p.m., February 4, 1975, in Charlotte, and February 6 in Monroe. For further information on either of these courses, please contact Charlotte, 376-6272, or Monroe 289-3925 or 289-2652.

New Fishing Licenses and Boat Registration

Make sure that you are equipped with a new fishing license and a 1975 boating registration certificate before sampling either of these sports, now that the new calendar is up.

Late Christmas Gifts?

If you order 25 or more subscriptions to WILDLIFE in one order, we offer a 20 percent discount, and the cost is $1.60 per year, per subscription.

WILDLIFE RESOURCES COMMISSION BUDGET SUMMARIES

CODE 26741
WILDLIFE BUDGET
JULY 1, 1972 - JUNE 30, 1974

EXPENDITURES

	1972-73	1973-74
I. Administration	$ 159,561.58	$ 183,778.03
II. Administrative Services—Finance	305,021.38	365,050.18
Administrative Services—Data Processing	99,713.63	111,684.47
III. Wildlife Protection	2,823,765.50	2,911,458.87
IV. Education	232,818.48	271,105.41
V. Inland Fisheries—Administration	93,644.51	111,432.93
Inland Fisheries—Production	281,763.66	367,346.52
Inland Fisheries—Management and Research	354,928.01	363,899.08
VI. Game—Administration	249,533.81	275,731.20
Game—Game Lands Management	870,083.91	969,820.56
Game—Surveys	133,753.38	128,400.04
Game—Services	273,611.66	290,844.71
VII. Special Fund—Reserves	161,485.00	167,835.00
Transfers	88,211.24	60,752.00
Refund of Receipts and Expenses	326,653.78	346,980.23
Total Expenditures	$6,454,549.53	$6,926,119.23

RECEIPTS

	1972-73	1973-74
Hunting and Fishing Licenses	$4,364,699.47	$4,573,443.33
Management Area Receipts	230,740.18	324,496.09
Federal Cooperation	1,267,837.85	1,183,194.12
Miscellaneous Receipts	8,290.38	56,219.76
Sale of Publications	81,587.94	87,111.82
Sale of Surplus Property	67,656.56	32,840.49
Rent of State Property	14,047.93	7,086.20
Reimbursement from Motorboat Fund	221,803.00	209,009.00
Donations	57.40	114.50
Refund of Receipts and and Expenses	326,653.78	346,980.23
Reversion from Capital Improvement Fund	19,013.00	6,617.51
Transferred from 1972-73 for Deferred Obligations		73,020.00
Total Receipts	$6,602,387.49	$6,900,133.05

SUMMARY OF OPERATIONS

	1972-73	1973-74
Funds transferred from preceding year	$1,195,074.45	$1,342,912.41
Gross Receipts for year	6,602,387.49	6,900,133.05
Total Available Funds	$7,797,461.94	$8,243,045.46
Less Expenditures	$6,454,549.53	$6,926,119.23
*Operating Reserve—June 30, 1973	$1,342,912.41	
*Operating Reserve—June 30, 1974		$1,316,926.23

*This operating reserve is to meet payrolls and other obligations during the months of July, August and September each year when revenue from hunting and fishing license sales is very low.

★ ★ ★ ★ ★ ★ ★

MOTORBOAT BUDGET — CODE 26743
JULY 1, 1972 - JUNE 30, 1974

EXPENDITURES

	1972-73	1973-74
X. Administration	$ 60,101.83	$102,109.51
XI. Registration	106,500.97	104,903.36
XIII. Engineering	221,968.51	292,139.64
XII. Transfers	317,327.00	269,519.00
Refund of Receipts and Expenses	10,161.09	22,772.17
Total Expenditures	$716,059.40	$791,443.68

RECEIPTS

Registrations—Boat	$314,956.01	$349,303.51
Gasoline Tax Refund Allocation	267,660.69	281,171.95
Reversion from Capital Improvement Fund	-0-	47,828.97
Refund of Receipts and Expenses	10,161.09	22,772.17
Miscellaneous Receipts	273.17	166.00
Federal Aid—Boating Safety	72,568.00	60,617.00
Transferred from 1972-73 for Deferred Obligations	-0-	44,009.00
Total Receipts	$665,618.96	$805,868.60

SUMMARY OF OPERATIONS

	1972-73	1973-74
Transferred from preceding year	$263,552.02	$ 213,111.58
Gross receipts for year	665,618.96	805,868.60
Total Available Funds	$929,170.98	$1,018,980.18
Less Expenditures	716,059.40	791,443.68
*Operating Reserve June 30, 1973	$213,111.58	
*Operating Reserve June 30, 1974		$ 227,536.50

*The operating reserve is to meet payrolls and other obligations during the months of July, August and September each year when revenue from motorboat registrations is very low.

Upon request, you will receive a copy of the detailed, line-item Wildlife Resources Commission Budget for the Biennium 1972-1974.

SUMMARY OF COMMISSION RECEIPTS FOR TEN YEAR PERIOD 1964-65 - 1973-74

The following table gives a picture of the growth in Wildlife Revenue during the past ten years.

FISCAL YEAR	RECEIPTS
1964-65	$3,446,620.80
1965-66	$3,823,857.59
1966-67	$4,039,229.00
1967-68	$4,325,366.00
1968-69	$4,522,591.23
1969-70	$5,778,336.50
1970-71	$5,409,248.19
1971-72	$5,915,883.10
1972-73	$6,602,387.49
1973-74	$6,900,133.05

HUNTING LICENSES AND PERMITS

	1972-73		1973-74	
	Number	Amount	Number	Amount
Resident Combination Hunting and Fishing Licenses	202,093	1,414,651.00	221,459	1,550,213.00
Resident County Licenses	82,783	186,261.75	74,816	168,336.00
Resident State Licenses	124,944	624,720.00	127,418	637,090.00
Nonresident Licenses	6,298	135,407.00	6,901	148,371.50
Nonresident 6-Day Licenses	2,346	40,468.50	2,224	38,364.00
Resident State Trapping Licenses	1,284	5,136.00	1,983	7,932.00
Resident County Trapping Licenses	1,178	3,534.00	1,512	4,536.00
Controlled Shooting Preserve Licenses	400	2,400.00	384	2,304.00
Game Lands Use Permits	67,961	373,785.50	78,222	430,221.00
Special Big Game Licenses	160,408	240,612.00	181,551	272,326.50
Miscellaneous Licenses	2,460	8,184.00	2,371	8,080.50
TOTALS	652,155	3,035,159.75	698,841	3,267,774.50

PERMANENT AND LIFETIME LICENSES

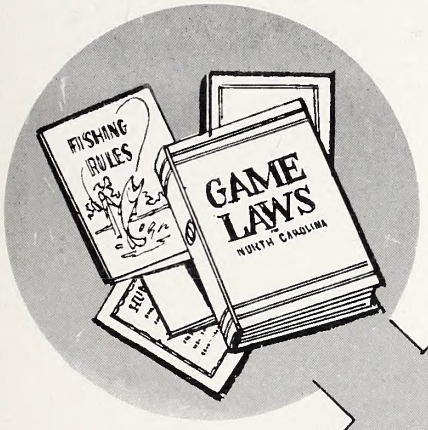
	1972-73		1973-74	
	Number	Amount	Number	Amount
Permanent Combination Hunting and Fishing Licenses for Residents Who Have Reached 65 Years of Age	4,693	46,930.00	4,660	46,600.00
Lifetime Combination Hunting and Fishing Licenses for Residents Who Have Reached 70 Years of Age	4,273	-----	3,436	-----
Lifetime Combination Hunting, Fishing and Trapping Licenses for 100 Per Cent Disabled War Veterans	433	3,247.50	383	2,872.50
TOTALS	9,399	50,177.50	8,479	49,472.50

FISHING LICENSES

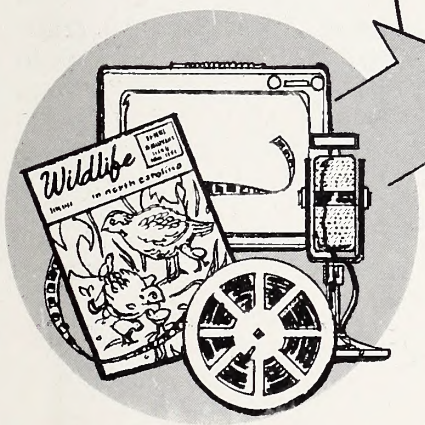
	1972-73		1973-74	
	Number	Amount	Number	Amount
Resident State Daily Licenses	68,235	68,235.00	63,366	63,366.00
Resident County Licenses	23,599	53,097.75	22,646	50,953.50
Resident State Licenses	155,423	777,115.00	164,735	823,675.00
Nonresident State Daily Licenses	23,475	46,950.00	23,996	47,992.00
Nonresident 5-Day Licenses	17,368	69,472.00	18,750	75,000.00
Nonresident State Licenses	11,036	99,324.00	12,690	114,210.00
Resident Special Trout Licenses	59,119	118,238.00	63,409	126,818.00
Nonresident Special Trout Licenses	3,314	13,256.00	3,843	15,372.00
Miscellaneous Licenses	13,690	20,745.00	13,473	20,408.00
TOTALS	375,259	1,266,432.75	386,908	1,337,794.50

REGULATION

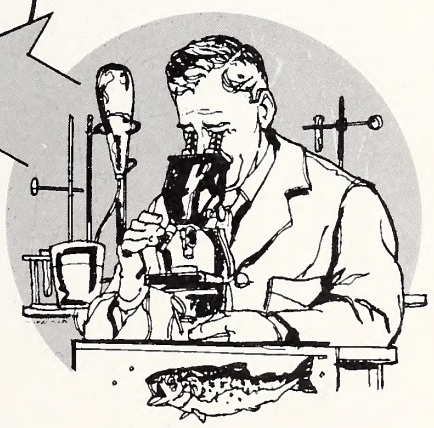
ENFORCEMENT



A SOUND WILDLIFE CONSERVATION PROGRAM



EDUCATION



RESEARCH

MANAGEMENT

PRINTED BY THE GRAPHIC PRESS, INC., RALEIGH, N. C.

STATLIBR* 1SAMPLE9999 1 *
DIV OF STATE LIBRARY
109 E JONES ST
RALEIGH NC 27611

NER
C45
7:39/2

North Carolina State Library
Raleigh

N. C.
Doc.

Wildlife

IN NORTH CAROLINA

FEBRUARY 1975

STATE OF NORTH CAROLINA

JAMES E. HOLSHOUSER
GOVERNOR

DEPARTMENT OF
NATURAL AND ECONOMIC RESOURCES
JAMES E. HARRINGTON, JR.
SECRETARY

NORTH CAROLINA
WILDLIFE RESOURCES COMMISSION

W. K. ANDERSON, CHM. _ _ _ _ _ NEWLAND
ROSCOE D. SANDLIN, V. CHM. JACKSONVILLE
WALLACE E. CASE, SECY. _ HENDERSONVILLE
D. JACK HOOKS _ _ _ _ _ _ _ WHITEVILLE
ROY A. HUNEYCUTT _ _ _ _ _ _ LOCUST
DR. LATHAN T. MOOSE _ _ WINSTON-SALEM
JAY WAGGONER _ _ _ _ _ _ _ _ GRAHAM
V. E. WILSON, III _ _ _ _ _ _ ROCKY MT.
ORVILLE L. WOODHOUSE _ _ _ _ _ GRANDY

CLYDE P. PATTON
EXECUTIVE DIRECTOR

EUGENE E. SCHWALL ROBERT B. HAZEL
ASSISTANT EXECUTIVE DIRECTORS

DIVISION CHIEFS

REX GARY SCHMIDT _ _ _ _ _ _ EDUCATION
RICHARD B. HAMILTON _ _ _ _ _ _ _ GAME
W. DONALD BAKER _ _ _ INLAND FISHERIES
DONALD E. CURTIS _ _ _ _ _ PROTECTION
CHARLES R. FULLWOOD, JR. _ MOTORBOATS
AND WATER SAFETY

The Editor gratefuily receives for publication news items, articies, and photographs dealing with the North Carolina out-of-doors, but reserves the right to reject materiais submitted. Full credit is given for ali materiais published.

Have you moved recentiy? Change your address promptly. Either send in an old mailing iabel from your magazine along with new address or type or print compiete old label information exactly as it appears on your magazine.

WILDLIFE IN NORTH CAROLINA is pubiished at the Wildlife Resources Commission offices, Aibemarie Building, Raleigh, N. C.

Phone Number AC 919/829-7123

* * *

Second ciass postage paid at Raieigh, North Carolina 27611.

* * *

SUBSCRIPTION RATE—$2.00 per year (12 issues). Add $1.00 for overseas postage except APO, Canada and U. S. possessions. Back issues —$.25 per copy pius $1.00 minimum for handiing and mailing; back issues may not be available. Send check or M. O. payable to WILDLIFE RESOURCES COMMISSION. Stamps cannot be accepted. Any employee of the Wildlife Resources Commission may accept subscriptions, or send to WILDLIFE, Albemarle Building, 325 N. Salisbury Street, Raleigh, N. C. 27611.

Wildlife circulation this issue 90,000

Wildlife IN NORTH CAROLINA

The official publication of the NORTH CAROLINA WILDLIFE RESOURCES COMMISSION, Raleigh 27611. A monthly magazine devoted to the protection and restoration of our wildlife resources and to the improvement of hunting and fishing in North Carolina.

VOL. XXXIX, NO. 2 FEBRUARY, 1975

IN THIS ISSUE

Wildlife Work: Fulltime Career ..... Page 4

By The Dawn's Early Din
by James A. Sullivan ..... Page 6

North Carolina's Scorpion
by Rowland M. Shelley ..... Page 8

Hiking The Haw for Happiness
by Chris Turner ..... Page 10

Resource-O-Gram ..... Page 12

The Chant of Autumn
by Jim Lasley ..... Page 13

Hunting
by Ted Dossett ..... Page 16

Rare Birds and Ancient Pines
by Howard Muse ..... Page 18

In Defense of Hunting
by H. Eugene Russ, II ..... Page 20

Land-Use Planners Get Help
by Frank Barick ..... Page 22

Stem to Stern
by Ed Jenkins ..... Page 24

Crackshots and Backlashes
by Rod Amundson ..... Pge 25

EDITORIAL STAFF

DUANE RAVER _ _ _ _ _ _ _ _ _ EDITOR
LUTHER PARTIN _ _ WRITER-PHOTOGRAPHER
JIM DEAN _ _ _ _ WRITER-PHOTOGRAPHER
TED DOSSETT _ _ _ WRITER-PHOTOGRAPHER
ROD AMUNDSON _ _ CONTRIBUTING EDITOR

An objective of all levels of government should be to achieve and sustain a balance of the social, ecological, and economic benefits derived from natural resources. Without such balance none of the factors on the scale will be worth weighing.

There is something in the appearance of most owls that does suggest intelligence if not wisdom. A possible exception to this is the barn owl with its monkey-faced appearance. But the barred owl, shown on the front and back covers of this month's magazine, maintains a certain air of awareness of everything going on in his presence. Painting by Duane Raver.

PHOTO BY TOM ROLLINS

Ready?

It's not often that the photographer can holler "hold it!" to a wild thing and then snap its picture. But this red-tailed hawk did remain still for Tom Rollins for this dramatic portrait.

Wildlife Work: Fulltime Career

"PEOPLE should never consider this kind of work if they're looking for an easy, nine-to-five job," Clyde P. Patton is fond of saying when asked about careers in environmental, ecological or wildlife work. "It's more than just a job, and to be good in it, you have to live and breathe it."

Patton ought to know. He's been the executive director of the N. C. Wildlife Resources Commission for over a quarter of a century — longer than any other man in a similar post in the country — and he speaks from practical experience.

His advice is not only a guide for those thinking of careers in these fields — particularly wildlife — but also for the many who are already working in these areas.

"To take an example close to home," says Patton, "I'd like to think that any man or woman who works for the N. C. Wildlife Resources Commission as being devoted not only to assigned duties, but also constantly on the lookout for ways to contribute to the entire program."

What this means is that a wildlife protector must be more than just a game and fish law enforcement officer. He should also be something of an amateur naturalist, a teacher and an active member of the sporting community.

"I suppose some folks don't know it, but our wildlife protectors are constantly talking to various outdoor clubs and other groups, giving programs which explain not only why game and fish laws are necessary, but also acquainting sportsmen and others with the many Wildlife Commission programs which are designed to improve fish and wildlife populations," says Patton. "In that sense, a wildlife protector is also an educator who takes an active part in informing the public through club meetings, news contacts and the like."

Patton sees a similar role for other employees of the Wildlife Commission. A biologist, for example, is not only concerned with research, study and management of fish and wildlife, he is also expected to take an active role in formulating ideas for regulations. And, the biologist, like the wildlife protector, is also an educator. Though a biologist is not principally concerned with enforcing game and fish laws, he is expected to keep a close watch while he is in the field or on the water and report fish and game law violations to the Division of Protection.

Recently, this concept was expanded by designating other Wildlife Resources Commission personnel as wildlife protectors. There are currently 188 trained men assigned principal duties as wildlife protectors. These men are highly qualified law enforcement officers. Now more than 100 other Wildlife Commission male employees who have primary responsibiliites in field and office assignments will also take a more active part in game and fish law enforcement by reporting violations to the proper authorities.

An example of this occurred recently when two Division of Game biologists were checking a western

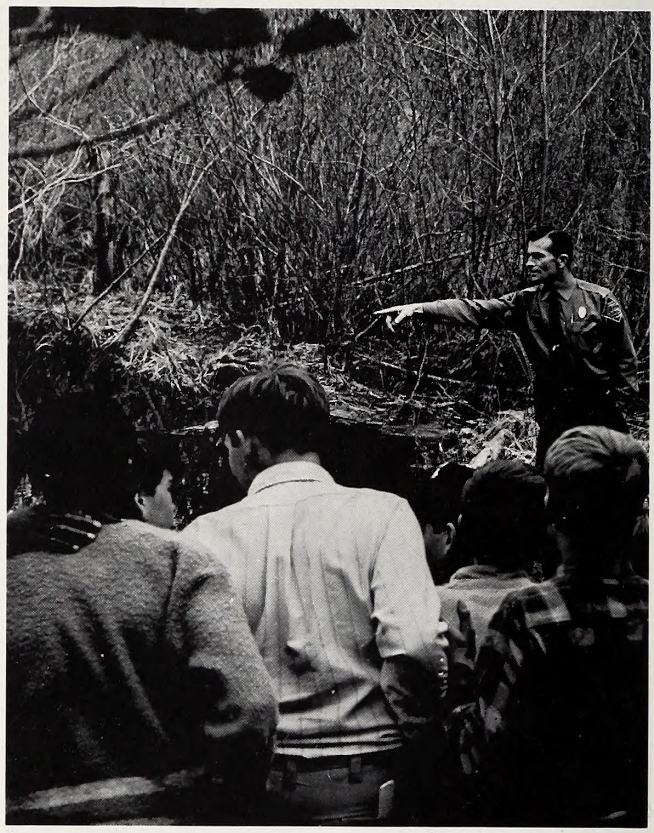


PHOTO BY LUTHER PARTIN

Wildlife protectors often function in an educational capacity (above) instructing youth groups in wildlife conservation. The fishery biologist carries out his duties in all sorts of weather and under some unusual conditions (below).

An early spring snow is taken in stride by game biologists banding trapped wood ducks. Field men are trained to handle many duties. It's a full-time job.

PHOTO BY GEORGE BURDICK

river to determine the duck population. They encountered a couple of hunters in another boat, and although the duck season was open, the biologists could see that the hunters had shot too many ducks.

A report was quickly relayed to mobile teams of wildlife protectors in the area, and while the game biologists kept the hunters under surveillance, the protectors moved in and checked their kills.

"This sort of thing greatly increases the range and effectiveness of game and fish law enforcement in the state because violators never know who might be watching them," said Patton. "Of course, we also encourage sportsmen to help us by reporting any violations they might observe."

The assistance rendered by the biologists on the river that day is an example of how biologists can help with law enforcement, but the wildlife protectors also serve the biologists on many occasions.

Since wildlife protectors are stationed in every county in the state, they often see things that other Commission employees don't.

Wildlife protectors frequently help environmental causes by reporting fish kills in rivers and lakes. They also recommend regulation changes and act as a liaison with the sportsmen in obtaining information on game kills which can be used to help biologists plot the proper seasons and bag limits. Protectors deliver bags of wildlife planting seeds to landowners who use these seeds to improve the habitat of their farms for wildlife.

There are other examples of how divisions within the Wildlife Commission work together to administer a total program.

A couple of years ago, at the suggestion of employees of the Division of Education, it was decided to change the procedure for adopting and publicizing regulations concerning either-sex deer seasons.

Previously, the either-sex deer regulations had been adopted too late for inclusion in the annual N. C. Hunting and Trapping Regulations booklet. Instead, information about these either-sex seasons was largely publicized through the news media and sometimes the information either did not reach the sportsmen or reached them in incomplete form.

Following the Division of Education's recommendations, the method for selecting these either-sex seasons was changed to allow time to get these seasons into the annual regulation booklet.

Of course, biologists responsible for determining the seasons and bag limits have also helped the Division of Education by visiting newspapers, TV and radio stations and furnished on-the-spot news features about local Commission programs to improve hunting and fishing. This year, game biologists in the western part of the state arranged for several important news features which have helped tell sportsmen about the activities of the Commission.

"The man or woman who succeeds in a wildlife, ecological or environmental career is the person who tries to see the total picture, not just some narrow facet he or she might be working on," says Patton.

Patton feels, for example, that some of the best suggestions for changes in the game and fish regulations have come from Wildlife Commission employees who were not directly involved in the formulation of regulations as a part of their assigned duties.

"Sometimes, it takes a fresh look at a problem to see the best solution," says Patton. "A man whose primary duty is, for example, in administration, hunter safety or motorboating can sometimes come up with a suggestion for a new or improved regulation on hunting and fishing that others working close to this task might overlook. We encourage this, of course, because it helps the whole program."

A dynamic and efficient program that effectively protects and enhances hunting, fishing and the environment in North Carolina is not just the product of professionals employed by the Wildlife Commission. It is also the responsibility of every sportsman.

The sportsman who **cares** is the wildlife program's greatest asset. He is careful to report game and fish law violations when he observes them in action. He reports environmental damages to the proper authorities. He suggests regulations that he feels will enhance fish and wildlife populations. In short, he is a "watchdog of the environment," and he takes this responsibility seriously.

And by the same token, the successful career wildlife, ecological or environmental employee is also a "watchdog" who is always looking for ways to contribute and cooperate, even in ways that might lie outside his assigned duties.

"That's the way it's supposed to work, and that's the way it must work if North Carolina's rich heritage of natural resources is to be preserved for ourselves and future generations," says Patton.

By The Dawn's Early Din

by James A. Sullivan
Photo by the Author

THIS morning was typical. It's about the same every morning, I guess, and though I am more or less accustomed to its regularity, today's beginnings seemed just a little harsher. Some vague inconsequential dream dissipated at the cry of our 18-month-old. Winter mornings with their dark beginnings are not conducive to her quietly awakening; unsure of the lack of sunlight, she promptly announces her rise. It continued only to be quelled with the harsh click of the hall light. The light I could stand, closing my eyes and pulling the blanket over my head it was all but eliminated. But the porous cover didn't stop those morning sounds, those inevitable invitations, or should I say warnings, that the day had begun. I could close my eyes but not my ears.

The dogs barked, jumping around with their toenails clicking on the furnace-room linoleum. I was pleasantly relieved by the door slamming behind them until they chanced upon a cow—right outside *my* bedroom window. Maybe it's because of the dark. Usually the sounds aren't as bothersome; I hear them, but my mind is not disturbed. In the light, the visible environment may take the load off one's auditory centers.

The radio began and coffee was announced. With a brightening sky, the morning's grating sounds were blunted in their effect, if not in their decibels. Winter mornings, those are the times that can impress you with the meaning of noise. Those are the times that you can feel the effects of noise on your inner workings. In the summer, the sun comes before the noise and softens its annoying qualities. In winter, the morning sounds are all alone—they have free rein to wreak havoc with the mind.

After the radio, the rising sun, and one last "go wake up daddy" ominously echoing down the hall, the day has begun. No longer will the vibrating washing machine and the sympathetic resonance of the kitchen's hanging pots be so evident. No longer will the neighbor's barking dogs and our answering pets, the chain saw up the road or big semi's passing a half mile away be consciously unavoidable. We can overcome our awareness of them by tuning in our visual world, by masking them with our air conditioners of "white sound," by concentrating on more "important" auditory signals. But can we avoid the physiological effects of those vibrations we have relegated to unimportance? Moreover, what are the effects on us and on our natural environment, inflicted by man's noise?

We usually associate effects of noise (or vibrations) with just those frequencies which are channeled through and registered by our ears, those sounds within the range of human hearing. We cringe at the sound of fingernails scraping a chalk board. We become irritable at the constant hammering of a pneumatic drill. But sound waves need not be heard to

"Noise pollution," it is sometimes called. What effect does it have on wildlife? Is it worth worrying about?

have their effects.

A French engineer who always became nauseous when in his office narrowed down the cause to resonance: his office was vibrating at seven cycles per second in response to a nearby air conditioner. To experiment with these "infrasounds" (below the frequency heard by man), he built a six-foot whistle to produce such vibrations. On the first test his technician was immediately killed—his insides reduced to an amorphous fluid by the sound.

I recall F. C. Steward, a well-known botanist at Cornell University, showing a photograph of a tree growing close to the site of a bombing. A nearby hit, though not killing the tree, drastically affected its growth form; branches had sprouted profusely all up and down the trunk—no longer did it have a typical crown. The effect was apparently due to vibrations (sound waves?) from the explosion. Admittedly, these examples are extreme, but they are indicative that sounds need not be registered by an ear to produce basic and at times drastic changes in the physiology of animals and plants. Just as a glass may shatter when vibrating in sympathy to a singer, or a bridge may collapse to the waves produced by a crossing army, living organisms may resonate to sounds in their environment.

In man, there is a predictable pattern of electrical impulses associated with brain activity. Of the four waves, (alpha, beta, delta, and theta), each seems to predominate in a particular mental state; for example, alpha waves are most prominent when the individual is relaxed and meditative. So reliable are these wave patterns that there are gadgets on the market to allow the individual to "tune in" a relaxed state by ensuring that alpha rhythms predominate. The frequencies of brain waves correspond to the frequencies of infrasounds, and range from 1 to about 20 cycles per second. These brain waves may be altered by sounds of these frequencies; weapons have been designed to take advantage of this possibility.

Lights flashing at 8 to 12 cycles per second can produce seizures in both epileptics and non-epileptics by interfering with brain waves, and it now appears that sound waves of a similar frequency can elicit seizures in some epileptics. Though most people are not so drastically affected, such unheard sounds may cause dizziness and nausea. Since a prime source of these infrasounds is a car running at a constant speed, could it not be that many accidents caused by "falling asleep at the wheel" may indeed have been induced by man-designed sound?

At the other end of the spectrum are those sound waves of high frequency, again unperceived by man. Watchmakers use instruments which produce such frequencies, to clean small watch parts and jewelry. Well-equipped biological laboratories use similar equipment to homogenize biological materials (cells, organs) into their component parts (membranes, sugars, fats, proteins). Anyone who has worked with such an "ultra-sonicator" knows the piercing whine and the immediate discomfort resulting from its use. Staying in the vicinity for prolonged periods can induce nausea and painful headache even though most of the frequencies emitted cannot even be heard. What about other machinery in our everyday environment that may emit such high frequency waves like jets and sirens? Can we truly avoid their detrimental effects?

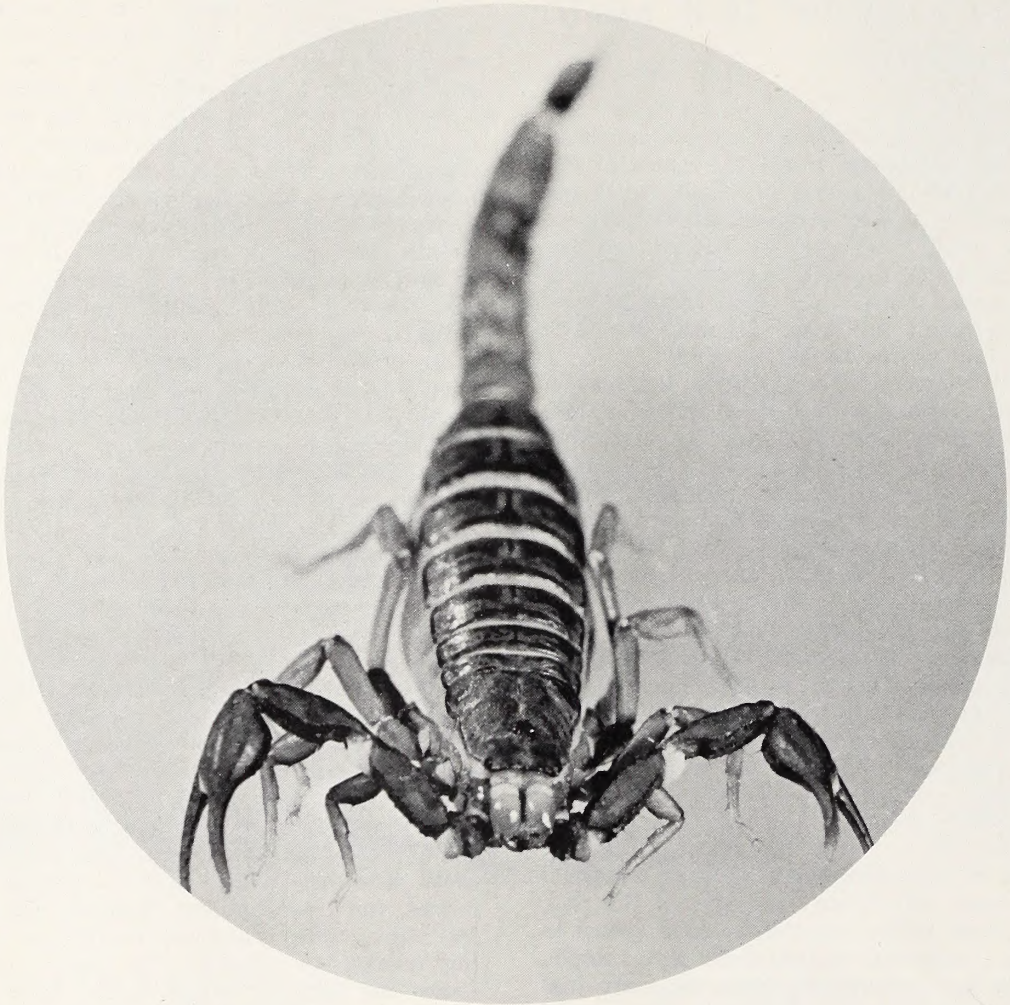
And what about those sounds that we can hear? Of the better known effects are temporary and permanent impairment of hearing. Loud, long-lasting noises of high frequency can produce discomfort, possibly pain, a ringing, and the temporary inability to hear certain sounds, particularly conversation. If the noise is too prolonged, it may cause a permanent hearing defect, now the plight of 16 million Americans.

But it may well be the more subtle effects of noise, those effects that are not so readily attributed to a particular cause as is hearing loss, that are the more important. Noises may cause abnormal embryonic development in mammals, and can affect the heart, blood vessels, pupils of the eyes, stomach and endocrine secretions, and the kidneys of man. Noises of the magnitude of a room air conditioner, even with a duration of less than a second, can measurably increase blood pressure, an increase which may last long after the sound has subsided.

A few years ago, my wife and I canoed in Algonquin Park, Ontario. It was after Labor Day, the scout troops had left, the nights were cold, and the leaves had just begun to turn. Three days of paddling and numerous portages took us past the sounds of other campers and brought us to a particularly beautiful spot—Blue Lake, apparently unvisited in recent weeks. We spent most of a day there, fishing, looking for signs of moose, and thinking. Our thoughts went back to former times, times that knew no roaring cars, no straining trucks, no whistles and horns and hammering drills. We had left noises behind and had begun to hear new sounds for the first time. All the audible sounds were natural, and each was an accent to the constant whisper of a slight breeze. For the first time, we heard the distant howl of a wolf. The night's hollow notes of a loon echoed unhindered, undistorted across those silent waters; we heard an unseen moose and the imminent approach of ducks on whistling wings. We were comforted. The soothing silence said "WELCOME."

Forgotten were our ties with progress and the associated sounds. Forgotten was the maxim, inborn in modern man, that noise equals efficiency. The sun's warmth, the quiet, the still, brought on a midday doze, lying there on that knoll above Blue Lake. But just as this morning's inconsequential dream was shattered by the sounds of another typical day, the not-so-inconsequential dream at Blue Lake was shattered. A slight quickening of the pulse was followed by an all-too-audible distant drone. Its continuing advance murmured that our ties could not be forgotten so easily. Louder, louder the drone amplified—a small rescue plane on its daily tour around the immense park, its message all too clear. Try as you might, its hard to escape man's noise.

References:
Berland, T. 1972. Bbrrreeeeeeuuuuuaaaaaggghhhh. Clatter, rattle, whirr . . . boom! Smithsonian 3(4):14-21.
Watson, L. 1971. Supernature. Doubleday; New York.



North Carolina's Scorpion

by Rowland M. Shelley
Curator of Invertebrates, N. C. State Museum
Photos by Luther Partin

SCORPIONS are among the world's most easily recognized and least understood animals. Their external body form, especially the tail-like abdomen, readily distinguishes them from related organisms. The abdomen terminates in the renowned stinging apparatus, and they possess four pairs of walking legs preceded by a pair of larger pincer legs called pedipalps (above). One structure in particular characterizes the scorpions, a pair of comb-like appendages called pectines on the ventral surface (underside) (page 9). The pectines are sensory organs whose specific function is largely unknown, although they are used by the male scorpion to test the soil texture during courtship. When the soil is smooth enough, the male deposits a spermatophore which is then "picked up" by the female.

Scorpions are often thought to prefer deserts and arid regions, but many species require a moist environment and live in tropical rain forests. They are, however, most common in the tropics and subtropics, and become rarer in temperate zones. In the United States, scorpions are most abundant in the southwest and Gulf states, and at least four species occur in Florida. Two of the Florida scorpions have been collected in Raleigh from shipments of fruit, and a Central American species was also taken in Raleigh from a shipment of bananas. These specimens are presently in the collection of the Pest Control Di-

The comb-like appendages shown here are called pectines, and the pincher legs visible also are known as pedipalps.

vision (formerly Entomology Division), North Carolina Department of Agriculture. None of these imported scorpions have been established in the Carolinas.

The only species native to our area is **Vejovis carolinianus,** sometimes called the southern unstriped scorpion. It is uniformly dark brown dorsally, as opposed to two Florida species which are striped. **Vejovis carolinianus** has also been reported from Kentucky, Georgia, Alabama, and Texas; it must occur also in the intervening states, but no authentic records are available. In spite of systematic collections of scorpions and related animals, the species has not been found in Florida, although the Georgia and Alabama records indicate that it probably occurs in the northern and pandhandle counties. A related species, **V. mexicanus,** occurs in west Texas and Mexico.

In 1926 and 1928, C. S. Brimley collected **V. carolinianus** in Clemson, South Carolina. In his 1938 book, **Insects of North Carolina,** Brimley indicated that the scorpion was common at Murphy, Cherokee County, and that it had been taken at Tryon, Polk County, by Franklin Sherman, state entomologist from 1900-1925. The Clemson specimens are in the Pest Control Division collection, but the location of the Tryon specimen is unknown. Rediscovery of the scorpion in Tryon in 1957, however, confirmed the earlier record and suggests that it may occur in Rutherford County also.

Last summer I traveled to Murphy in order to confirm Cherokee County as a locality for **V. carolinianus.** Three individuals were found—two under large rocks on a dirt road, 6 miles WNW Culberson, and one under leaves in a deciduous forest on the north side of Lake Hiwassee, 7.2 miles NW Murphy. Both localities were less than 2000 ft. in elevation.

The road specimens retreated for cover when disturbed, but the forest individual was more aggressive and came out fighting. It raised its pincers much like a crab and curved its abdomen forward over its body. It repeatedly lashed backward and downward with its stinger. Being somewhat apprehensive of the stinger, I succeeded in coaxing the scorpions into a collecting jar without handling them directly. Clay County, just east of Cherokee, was also searched, but no scorpions were found. The western-southern portions of Clay County are approximately the same elevation as the Cherokee localities, and the scorpion should occur there also. Its presence in the Smokies and higher mountains has not been documented and is doubtful.

Thus, the scorpion is present in the Murphy and Tryon areas of North Carolina but is absent in between, a striking example of discontinuous distribution within the state. Overall, it appears that the Appalachian Mountains divide the range of the scorpion into a western branch, which extends into Kentucky and drifts over into the low parts of Cherokee and probably Clay Counties, and an eastern branch, which extends through Clemson, South Carolina, into Polk County. Further investigations may determine how far the latter branch extends into the piedmont of the Carolinas.

Fear of scorpions arises from the fluid that is injected when the animal stings. The venom is deadly to the invertebrates upon which the animal feeds, but its effect on man varies with the species. Some scorpions are harmless to man, but according to Savory (1964), the venom of **Centrurus noxius** from South America and **Adroctonus australis** from north Africa is almost as dangerous as that of a cobra. Fortunately, antitoxins have been developed for these species.

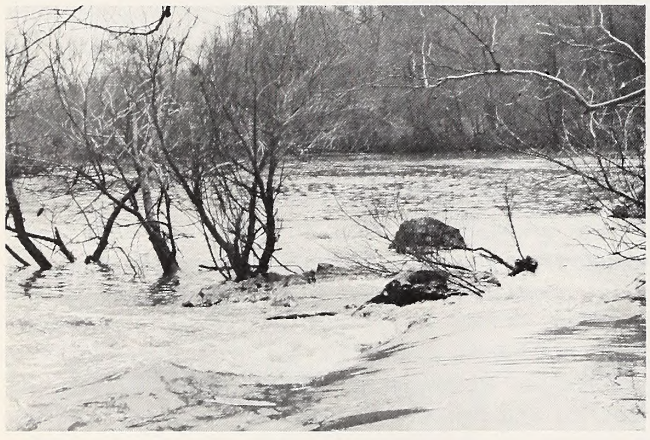
Some species in the southwestern United States are also regarded as dangerous, especially to children. Regarding the venom of **Vejovis,** the literature is contradictory. Savory (1964) stated that the Mexican **Vejovis** could cause pain, partial paralysis, and fever, and that it had been known to cause the death of children. However, Muma (1967) reported that no species of the genus had ever been incriminated as being poisonous to man. There is no evidence that **V. carolinianus** is dangerous to man, but in view of these conflicting statements, it would seem advisable to handle the Carolina scorpion with caution, if at all. ⬍⬍

REFERENCES

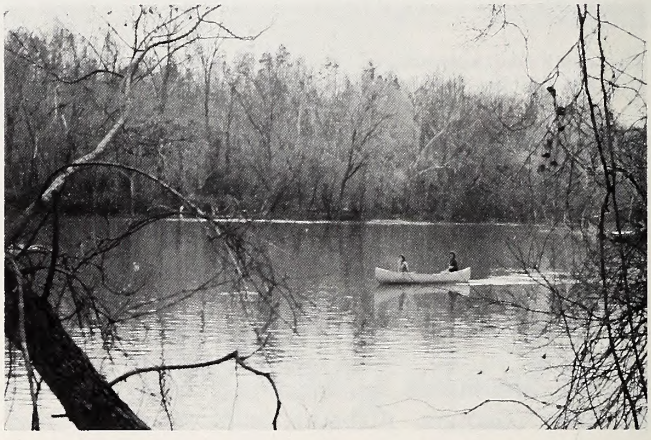
Muma, M. H. 1967. Scorpions, whip scorpinos, and wind scorpions of Florida. *Arthropods of Fla. 4:* 1-28 *(V. carolinianus,* p. 14.).

Savory, T. H. 1964. *Arachnida.* Academic Press, London. p. 263.

Debbie Turner, and Bruce and Debbie McIlroy (above) receive a roar of inspiration from the Haw River as it pours over Bynum Dam. The Haw can be treacherous with swirling high waters from spring rains or melting winter snow (below).



Or it can be serene and inviting to canoeists. Some places are very wide and still, providing gentle transportation. A scouting trip or two should provide information on possible landing spots for land visits. One thing is for sure, you won't have much company in most sections.



PHOTOS BY THE AUTHOR

YOU can hear the roar of the mighty river even with your car windows closed as you cross the Bynum Bridge on U.S. Route 15-501. For the adventurous, the roar is a challenge. For most, the roar is just an interruption from the sounds of the highway.

While the Haw winds for approximately 130 miles from its origin in northeast Forsyth County to the Chatham-Lee County line where it joins the Deep River, few places along its banks offer more pristine conditions for hiking than the area just north of Bynum, North Carolina.

Looking up the river from the bridge, you see the water pouring over the Bynum Dam. The river is about a thousand feet wide at this point. Between the bridge and the dam the river is divided by several tree-thatched islands creating turbulent white water.

When deciding which side of the river you want to hike, a topographical map of the Bynum Quadrangle is a must. These maps are sold by the U. S. Geological Survey, Washington, D. C. 20242. Local trail shops should have them in stock for less than a dollar a piece.

Not only will the map help you decide which side of the river you want to hike, it will even help you realize where you are once you set out.

When hiking upstream it doesn't take long to leave most traces of civilization behind. On the east side, you leave your last floating beer can after you cross the second creek via natural tree-bridge.

The first thing that my wife, Debbie, and Bruce and Debbie MacIlroy discovered when we took the east route upstream was that this was brier territory. Long pants and long sleeve shirts were essential.

Debbie Turner found out the hard way that straight legged jeans are better than bell bottoms for hiking, when the briers pulled up her bells leaving painful

The author (left) demonstrates one method of using a tree-bridge. After hiking for more than three miles upstream from the Bynum Bridge, Debbie Turner (above) looks in vain for a place to cross. Relaxation takes many forms (lower left). This black snake (below) was very sluggish as it ventured from its winter home.

by Christopher D. Turner
Cary

Hiking the Haw for Happiness

reminders.

After several run-ins with brier patches we learned to recognize them from a distance, and then were able to swerve a short distance from the river and successfully avoid them.

One of the nice things about the route upstream from Bynum is that the wildlife gets more prolific and more diversified the further you go.

At the onset we saw birds commonly seen around town: cardinals, sparrows, wrens and chickadees. As we moved farther from civilization the birds got bigger. We spotted woodpeckers, flickers, crows, buzzards, and even a heron taxying through the trees carefully avoiding the strangers in his territory.

If you like to identify the plants and animals that you see along the trail, a good pocket guide to the flora and fauna might prove invaluable.

The guidebook is especially useful if you don't know your snakes. There are plenty of snakes along the river and the vast majority are harmless and most are inactive during cool weather, but it's a good idea to be able to recognize the poisonous ones because you need to know the name of the snake to get the correct antivenin if you should be bitten.

While we didn't see any poisonous snakes, the best policy when in doubt is to leave any unrecognizable snakes alone.

After hearing about briers and snakes, you're probably wondering why anybody would want to hike the Haw. If water rushing over rocks, and the smell of the good outdoors does nothing to soothe your inner tensions, then the Haw will do nothing for you.

If, on the other hand, you need to get away from it all for a day or so, and you enjoy walking for miles without seeing a house or factory, then hiking the Haw will be hiking for happiness. ⬍

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Some Hunting Seasons Still Open

Exact open areas and dates should be confirmed from the Hunting and Trapping Regulations, but there is still some hunting available. Among the more popular game open until March 1, are quail and ruffed grouse. Rabbit season closes February 8. February 15 marks the close of the trapping season on furbearers. Raccoon and opossum hunters have until March 1, to try their luck. Turkey hunters will have to wait until April 12 for the turkey season which extends through May 3.

Hunting Regulation Hearings

Public hearings on the 1975-76 Hunting and Trapping Regulations to be held in April will be announced in the March issue of WILDLIFE. Now is the time to be thinking about any changes you would like to suggest; and make your plans to attend one of the nine hearings in April.

1974 Boating Season

It was a good one unless you were one of the 139 unfortunate boaters who had an accident during the calendar year. There were 38 fatalities during 74 compared with 54 in 1973. Safe boating is more fun (and less expensive) than careless boating. Do your part in 1975.

Safe Boating Starts Here

The Durham Squadron of the U. S. Power Squadrons, begins its 10-week Boating Course on March 6, 1975 at 7:30 p.m. in the National Guard Armory on Stadium Drive in Durham.

Raising Catfish

From time to time, we receive inquiries about commercially raising catfish and other fish in North Carolina. One source of information on this subject is Catfish Farmer of America, Tower Building, Little Rock, Arkansas 72201. They have a bi-monthly publication dealing with catfish, trout, and other commercial fish.

The Chant of Autumn

PHOTO BY TONY RUMPLE

by Jim Lasley
Chapel Hill

THE line of horseback riders disappeared behind the trees as the setter and pointer, a good ways out front, emerged from the woods and began working down the hill.

The big liver and white pointer stretched his legs out like a race horse, holding his tail and head high. He ran along the ridge, straight down the trail beside the fence. The setter, a smaller dog, speckled black, worked back and forth in a wide zigzag motion, covering the field before it narrowed at the lake crossing.

"Wowwww Bowwww Wowwww Bowwww Wowwww," one of the handlers cried to his dog.

A few minutes later they were in a broomstraw field where quail had been planted. The handlers dismounted quickly, talking to their dogs as the two judges watched the action from their mounts.

"Come in here. Find'em, Lou. Look close in here," the setter's master shouted, flagging the dog into position with his arm.

"Hunt close . . . Careful now . . . Careful . . . bird, bird in here . . . careful."

The setter worked out the field slowly and methodically, hunting out the scent of quail, until he froze like a picture, his tail pointed high, his head dead on aim at the bird.

The handler raised his hand high, and the judge galloped over for a closer view. The handler kicked at the broomstraw and a quail exploded across the field, as the handler's blank pistol cracked. The setter didn't flinch. Then the handler whistled the dog on.

Scenes such as this are becoming more common across North Carolina as the popularity of field trials increases. This year some 32 trials are being held around the state, including 18 scheduled on the Sandhills Game Lands at Hoffman.

PHOTOS BY TONY RUMPLE

Above, an unidentified handler works his dogs through a broomstraw field. The pointer below wants in on the bird work. He waits with the gallery for the brace out on the course to work the field where birds were planted.

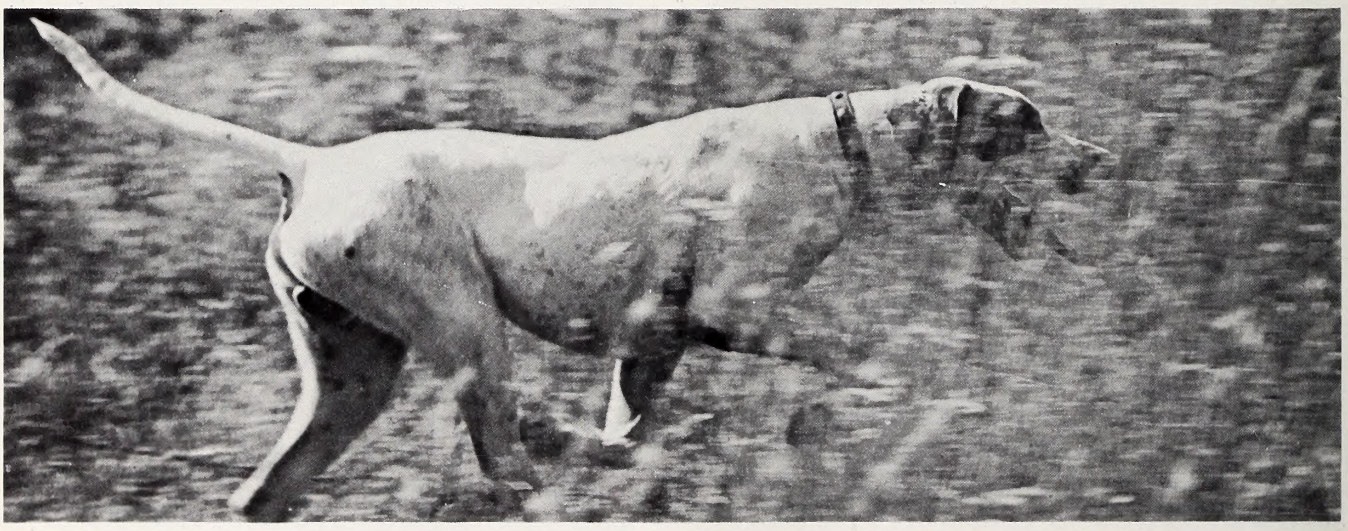
PHOTO BY JIM THORNTON

Mr. and Mrs. Cy Hoskins of Warrenton are an unusual couple. They own about 50 bird dogs and say their lives revolve around hunting their dogs. Their pickup truck is rigged especially to transport dogs.

PHOTO BY TONY RUMPLE

Warren Burgress of Mebane "salts down" a broomstraw field with penraised quail on the grounds of the Alamance Wildlife Club. All of these efforts culminate in the working of the dogs, a thrilling sight.

PHOTO BY TONY RUMPLE



The field trial season began in October and runs through March. Each trial is sponsored by one of 23 clubs that comprise the N. C. Field Trial Association.

English setters and English pointers usually are the only breeds entered in Tarheel field trials. Occasionally Brittany spaniels and German shorthaired pointers are run.

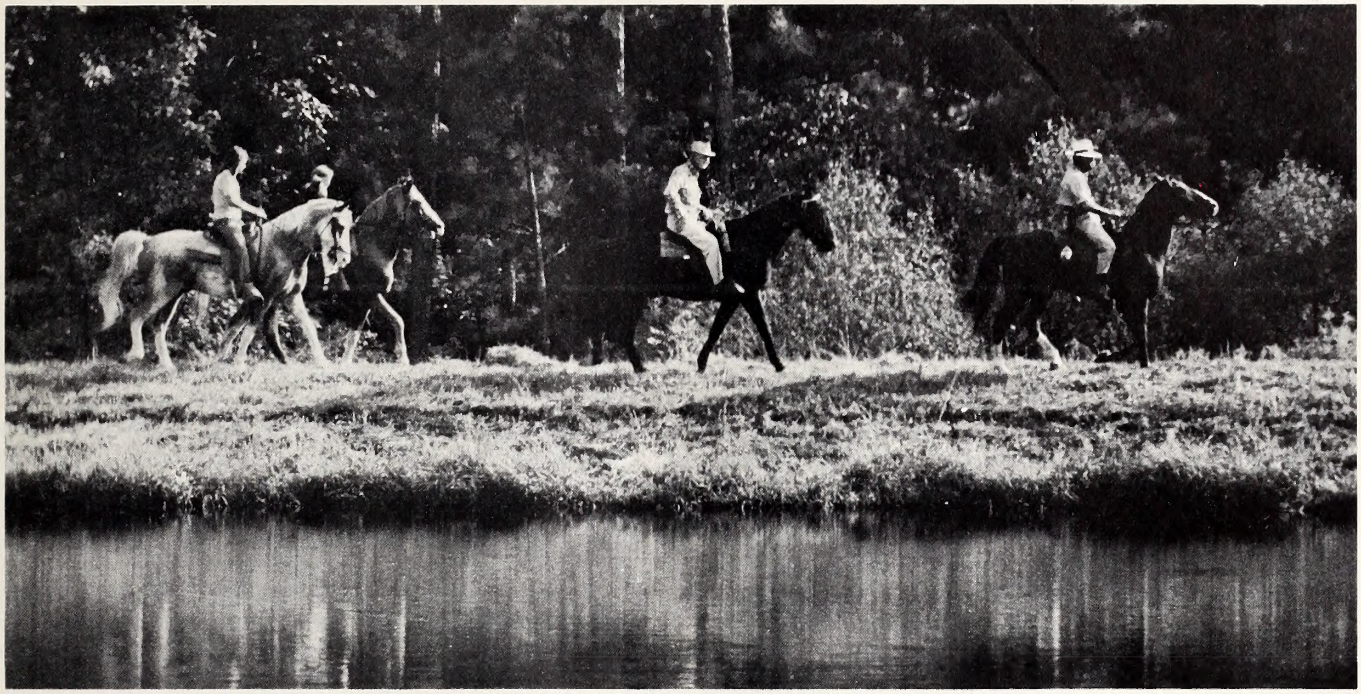
The number of entries ranges from 20 dogs in the smaller trials to 150 or more at the championship Hoffman events. Dogs are typically run in pairs or braces with handlers and two judges on horseback. The 50- to 100-acre course usually covers woods and fields and takes about 30 minutes to run. Dogs end up in a field where quail have been hidden. The object is for the dogs to point the birds and remain steady while the handler flushes the bird and fires a blank pistol. No birds are shot. Dogs are judged on range, pace, style, ability to find birds and response to handler.

Most of these abilities are natural or instinctive. Dogs cannot be taught to seek, point or smell birds, but they do learn basic obedience commands.

Trials usually are divided into three classes — puppy, derby and shooting dog stake. Dogs in the first stages of development which are no more than six months old are eligible for the puppy class. These dogs are judged primarily on ability to run in a hunting-like fashion. No birds are put in the field for them to locate.

Dogs two years old and under are permitted in the derby. They are supposed to point but generally are considered still to be in the process of being broken or trained.

Dogs running in a shooting dog stake should have



A number of horseback riders, including judges and handlers, usually follow a brace of dogs around the field trial course. Below, Pender Durham of Wilmington, works his stylish English pointer at a Durham County Wildlife Club field trial.

PHOTOS BY JIM THORNTON

developed to the fullest extent of their hunting ability. Of primary consideration is staunchness to wing and shot, range and style. There is no age limitation.

Some trials also include an open, all-age stake. Both professional and amateur handlers may enter.

About eight futurities or breeders' stakes are run each year in this country, including one in North Carolina at Hoffman. The object of this stake is to improve the breed. Pups are nominated for the futurity through a $5 deposit when the bitch is bred. When the pups are one month old another $5 is paid, then a month before the trial a $15 deposit is required, plus a $30 fee later to run in the trial. Prize money for winning dogs is divided between the breeder and owner.

The granddaddy of North Carolina field trials is run the second week in February at Hoffman. It lasts about 10 days with an entry of some 180 dogs. Smaller trials usually last one or two days.

Field trials date to 1874, when the first event was recorded in Memphis, Tennessee. The N. C. Field Trial Association was born some 20 years ago. Now field trials are held in practically every region of the nation.

Sportsmen hope field trials will result in the improvement of the various breeds, as they put their dogs' field qualities to the test in direct competition. Many of the thrills of hunting are bound up in a field trial except the taking of birds. Neither the trial nor the hunt can replace the other. Each retains a certain flavor that cannot be duplicated.

For information on local trials contact the nearest county wildlife club, the N. C. Wildlife Commission or Fred Wood, president, N. C. Field Trial Association, Box 947, Pinehurst, N. C. 28374.

HUNTING

Ted Dossett

If it has to do with hunting, you are likely to find it here. Ted Dossett, motion picture photographer and "Wildlife" staffer, will discuss the many facets of the Tarheel hunting scene.

BENEATH the layer of dust, half a dozen bobwhites were exploding from the knee-high broomstraw into a crisp, clear afternoon. In the foreground, a clean-limbed pointer was frozen in the classic stance, one foreleg lifted and tail erect. He was backed by another dog of equally fine lines. From the background a pair of hunters with guns at the ready, leaned forward in anticipation of taking "three on a rise."

It was the stuff dreams are made of, one of those indelible moments that for years to come you turn over and over in your mind like a slow motion replay.

But the dreams kindled by the illustration on the calendar never escaped the reality of the dusty, fly-specked paper. They were crushed by the derisive snort that issued from the weathered countenance of a man seated near the drink box . . . "Well, I'll tell ya', that's a pretty picture all right but it just ain't real . . . it's been nigh to thirty year since I had a covey to hold in an open field like that . . . matter-a-fact, you can't even find birds in a field no more."

Next to him another man leaned forward and spat a thick stream of tobacco juice into an empty lard can . . . "That's why I got rid of my dogs, the birds is too wild nowdays. When you do find 'em they's up and gone afore you get within two hundred yards of 'em . . . what good's dogs if you can't get a shot?"

A third man, waving a slice of apple impaled upon the blade of his jackknife, admonished no one in particular because they had all heard it before, "It's them Mexican quail . . . they just fly slam out of the country and when they do come down they hit the ground arrunin' . . . I bet in the last five years before I quit huntin' I didn't find a dozen singles . . . used to, we didn't even bother with singles."

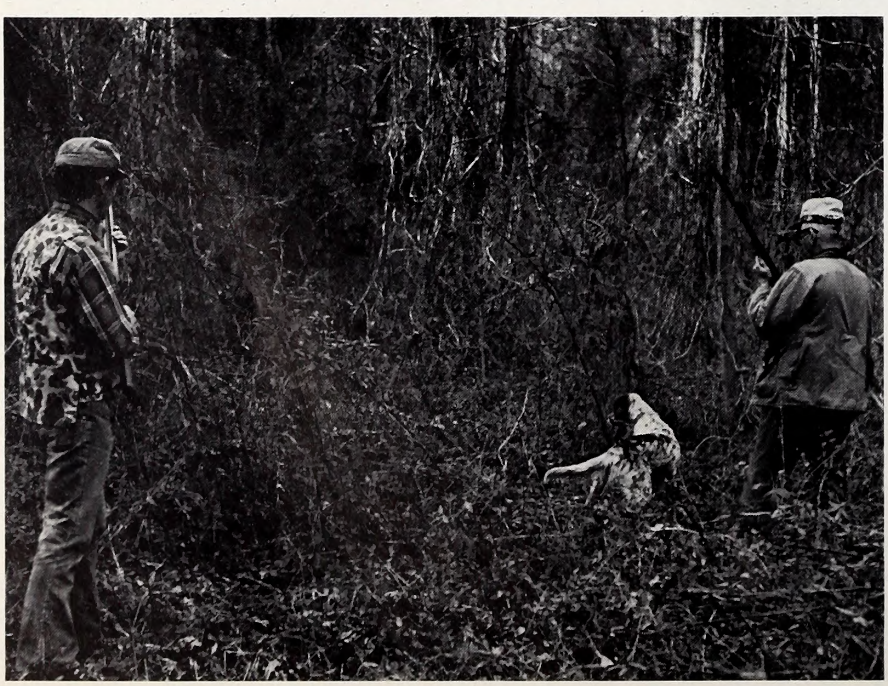
And so, from the cabs of pickup trucks to high-priced sporting goods stores to church suppers, the great debate rambles on; whatever happened to that good old bobwhite that hunters used to love so well?

The veteran hunters at the country store pinpointed some of the complaints and there apparently is some truth to them . . . quail don't hold in the open fields the way they used to. In fact, there are strong indications that quail don't use open fields as they did in the past.

Wildlife Commission Biologist Charlie Woodhouse believes there are several factors that have made today's quail hunting a much different sport than it was when he began almost 40 years ago.

"Used to be when the dogs pointed a covey in an open field, and say if three of you were hunting, you could line up and when everybody was ready, you could walk in and kick 'em . . . the birds would get up and you'd have a pretty good shot . . . and the singles wouldn't fly but a couple hundred yards usually."

But perhaps while the bobwhite was endearing it-



A thicket of this type is called many things by quail hunters . . . mostly unprintable. But the birds are often there and it takes a bit of doing to get them out. The author (left) and biologist Woodhouse are about to try.

self to our hunters by "sticking" in the open, it was also speeding up the process which has made that very trait less common in the bobwhite today. The offspring of the quail that in the good old days didn't hold for the hunter, that flew the farthest for the thickest cover and "hit the ground arrunin'" are still with us today. It was simply a matter of survival.

At the same time, wildness in bobwhite quail is not new. Records from before the turn of the century claim that coveys sometimes lit in trees, they "flew slam out of the country" and often ran "so badly that good dog work is difficult and unsatisfactory."

Add to this another observation that consistently surfaces in quail hunting records of the past 70 years; that birds become more difficult quarry when they are hunted over the same range for a long period of years. In other words, they become "educated."

But the lessons of the past are easily ignored and new tradition has given the Mexican quail an oversize role in the general lore of bird hunting. Many times, when hunters encounter wild birds, they point the finger of blame at this southwestern cousin of the eastern bobwhite, as though there there are two different kinds of bobwhite in North Carolina. However, the importation of Mexican quail ended in the 1930's and later studies showed that few of the birds survived for very long after their release. Further, the effects of any interbreeding that may have taken place between the eastern and Mexican bobwhite have probably become obscured in time.

Another factor that probably made quail hunting an easier sport in the old days can be attributed to a change in land-use patterns. Biologist Woodhouse recalls that particularly in the eastern part of the state, brush fires, whether accidentally or deliberately touched off, kept the thick cover burned down and the woods open. Naturally, such open woodland was easier to hunt because it provided less dense cover for bobwhites. At the same time, the relatively "cool" fires stimulated the growth of food plants favored by bobwhites.

Today, fire prevention is the practice and the woodlots and stream bottoms once kept open by burning, have evolved into thickets so dense that every trunk, branch, vine and brier seems bent on thwarting the hunter from getting a shot at a bobwhite.

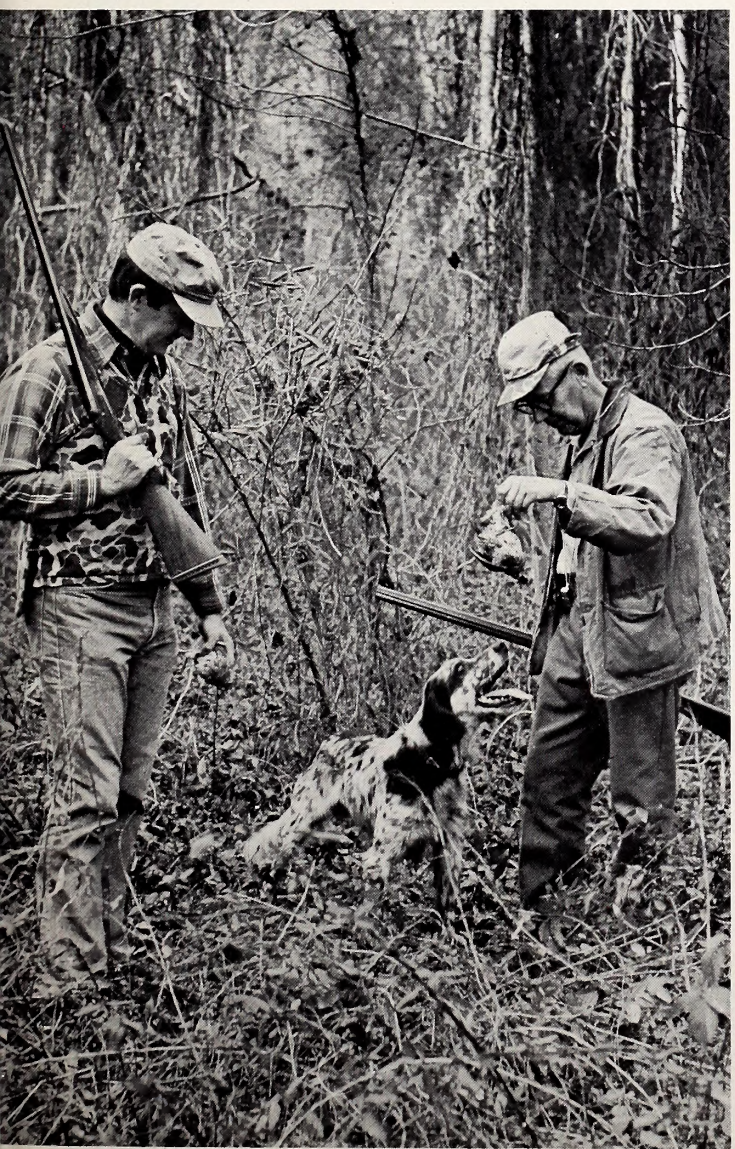
Yet the numbers of quail are still there and coveys are often found along the edges of these thickets. But like Br'er Rabbit, bobwhite has found a home in the brier patch and it takes a determined hunter to bag a limit in that kind of cover.

Another change that has had a major impact on the habits of quail is an ever-increasing urbanization. It has unleashed a furry horde of stray cats and dogs that wreak havoc on quail populations. And the constant harassment by these urban castoffs is a more than adequate reason for wildness in quail.

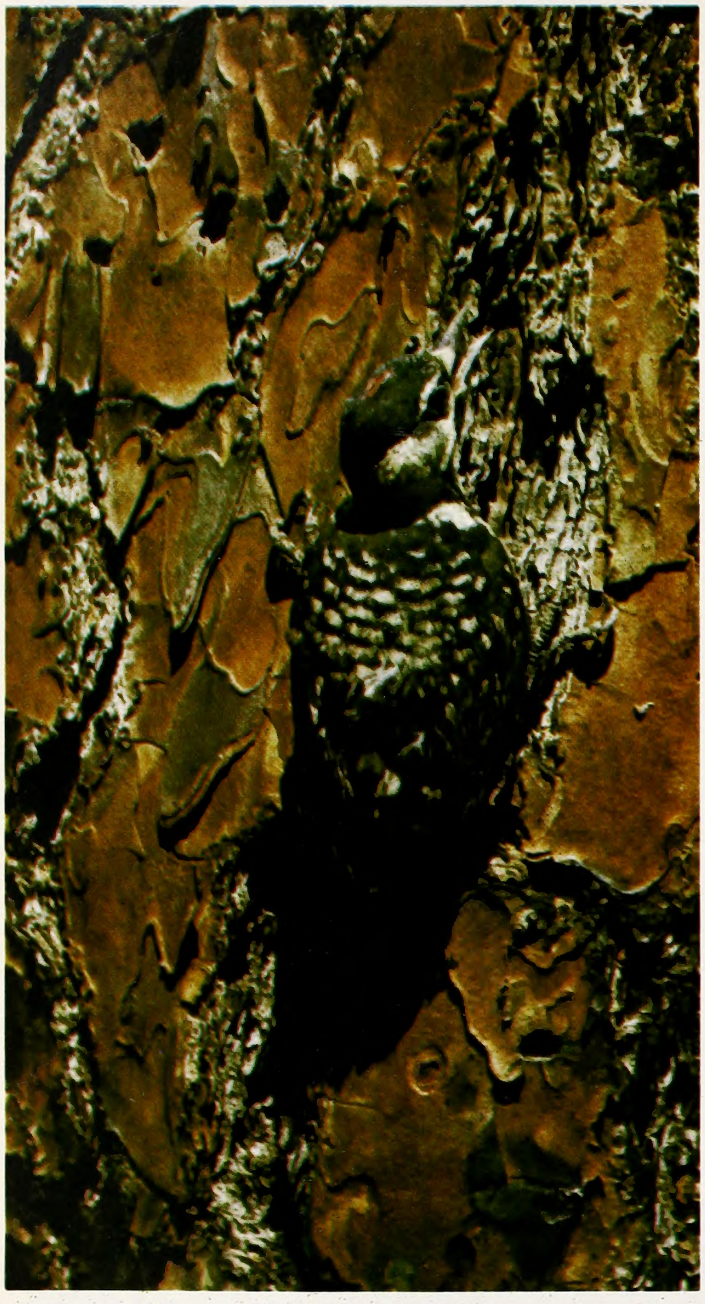
At the same time, hunting pressure seems to have been diminished as a force in changing the behavior of bobwhite. Woodhouse says that in the countryside within easy driving distance of our urban centers, "You can go out on a Saturday afternoon and not hear a shot fired . . . by contrast, if you go to less settled areas you still might not hear a shot, but the birds won't be as wild either . . . so it's not hunting pressure."

The list of influencing factors and variables seems endless but there is little doubt that quail hunting has changed over the years. It stems from reaction to the changes in the behavior of the birds. But before that happened, the birds had responded in many areas to drastic changes in land use.

When drawn together, all these factors weave a pattern of survival which shows that good old bobwhite has adapted to the entity called the "new South." In final form, the pattern makes up into a smarter, tougher bird that calls for a smarter, tougher hunter who will have to work for his shots and forget about the mint julep myths of bobwhite quail hunting in the old South.



The happy setter knew that they were in there all the time. Fortunately the hunters didn't let her down . . . this time. A good dog, one that doesn't mind the rough going, is essential for hunting this type of cover. Most of us pass up spots like this.



Rare Birds and Ancient Pines

by Howard Muse
Photos by the Author

IT is 1 P.M. on Thursday, July 11 — a typical hot, overcast summer afternoon — and J. H. ("Jay") Carter, III, a 24-year old Southern Pines native is tramping through the pine woods of the former Boyd estate in Southern Pines in search of an elusive and rare bird, the red-cockaded woodpecker.

As an amateur ornithologist, he has studied the birds of the Sandhills for a decade. "Nobody has ever cared to do any research here so I've been plugging away on my own for ten years," says Carter. He has found red-cockaded woodpeckers on the Boyd estate, and on the nearby Weymouth Woods Sandhills Nature Preserve, along with Fort Bragg, Camp MacKall, the Sandhills Game Lands, and elsewhere in the Sandhills. Now, Carter is working on a master of science in zoology at North Carolina State University. The subject of his research, appropriately enough, is the red-cockaded woodpecker.

Survival Struggle

One of the smallest and least known of the southern woodpeckers, the red-cockaded is struggling for survival. Only an estimated 10,000 birds remain, and in 1968 the U. S. Bureau of Sport Fisheries and Wildlife declared it an endangered species. It is in trouble because the decadent old pines — longleaf, loblolly, and slash — that it requires for nesting are fast disappearing and being replaced by short rotation pine plantations. Fortunately, perhaps 50 percent or more of the

The tiny red spot on the top of the red-cockaded woodpecker's head is barely visible as this bird works over a pine for insects. Typical habitat is shown at lower left. Nesting is restricted to fast-disappearing, old pines. The nest hole (below) is usually surrounded by patches from which the bark has been removed.

existing colonies are on federal land, primarily national forests, and at least potentially can be protected. The largest concentration of the bird, some 250 to 300 colonies, is on the Francis Marion National Forest in South Carolina. Another promising factor is that some of the large paper companies have undertaken to protect red-cockaded nest trees on their lands.

Assuming that existing colonies can be protected, the red-cockaded woodpecker is threatened from another direction. Unfortunately, its range coincides to a large degree with that of the imported fire ant, a species that the U. S. Department of Agriculture has been trying to eradicate since 1969 with Mirex, a chlorinated hydrocarbon. So far, more than 650,000 acres have been treated. The effects of Mirex on the woodpecker may be two-fold. First, Mirex may affect the bird's reproduction, and any impairment of its reproductive capacity may diminish its numbers still further. Second, Mirex not only kills fire ants, but many other insects as well. Since the woodpecker is primarily insectivorous, its food supply may not only be significantly reduced in quantity but contaminated as well.

Red-cockaded woodpeckers nest and rear their young in holes 8-12 inches deep pecked in the trunks of old living pines, usually those with red heart, a fungus disease that normally infects pines more than 80 years of age. If a nest tree dies, the pair deserts the first nest and makes one in a living tree nearby. Moreover, red-cockaded woodpeckers nest in colonies, and you can often find several nest trees in a group. No other southern woodpecker has this habit of community nesting, nor is as gregarious. On the Boyd estate, its abandoned nests have been taken over by bees or flying squirrels.

Nest Trees Marked

The woodpecker ranges throughout the south except for the Appalachian Mountains. You can recognize a nest tree at a considerable distance by the streaks of white pitch marking the trunk. Pitch oozes from the nest holes and from deep horizontal notches chiseled in the bark above and below it. Ornithologists say the sticky pitch repels would-be predators and traps insects that the woodpecker feeds on.

On the Boyd estate, which the late Mrs. Boyd bequeathed to Sandhills Community College earlier this year, the woodpeckers are nesting in one of the few remaining virgin longleaf stands in North Carolina, or in the South, for that matter. From an environmental and historic standpoint, they are the most important trees in the Sandhills. "From the aesthetic and scientific standpoint this stand is priceless. You couldn't put a price on it," comments Carter. There are, to be sure, many scattered "old growth" longleaf pines in the Sandhills, but this is the largest such stand in the state. Altogether, Carter estimates that there are 500-600 of the old longleafs scattered throughout the 200-acre estate.

There are taller, larger, and older trees in Moore County. There are loblolly pines 100 feet tall, and oaks six feet in diameter, and more than 500 years old. Yet, these longleafs stand virtually alone as living survivors of a virgin forest that we shall never see the likes of again. They once grew in a virtually unbroken expanse from southern Virginia to east Texas, but there have not been many around since the virgin forest was cut in the 50 years that preceded the Depression. All that remains are scattered patches of "light wood" stumps.

For one thing, you have to admire these trees just for being here. Escaping the loggers was a feat in itself for these trees. But it is more easily understood when one realizes that despite their age, many are cull trees, and their small size relative to their neighbors almost a century ago is probably what saved them from destruction.

"Pines are short-lived trees relatively speaking. These are overage already. Mac Goodwin of Weymouth Woods bored some of these trees several years ago, and they were about 250 years old," states Carter. To place them in historical context, they started growing about the time George Washington was born, more than a quarter of a century before Moore County was first settled. Most are 80 to 85 feet tall, and 1½ to 2 feet in diameter. They were taller once, but their crowns have been flattened by repeated ice storms. How long will they continue to live? No one knows for sure, but L. M. ("Mac") Goodwin, Jr., the Weymouth Wood's ranger, has found on old longleaf stump with more than 400 annual rings.

"That's the biggest longleaf I've seen in the Sandhills. It measures 31.8 inches dbh*," exclaims Carter as we pause to examine an old pine leaning precariously to one side. He estimates that there are 15 red-cockaded woodpeckers on the estate, and another four in Weymouth Woods. "A single group of birds may have 150 acres in its daily range. Trying to count them is almost impossible," he adds.

As we walk uphill along an abandoned power line right-of-way we come upon an overstocked stand of second-growth longleaf pines. "Areas like this need to be harvested," explains Carter. "You could take 50 percent of the timber without hurting it. Most of the people don't realize the role fire plays in the development of this area," adds Carter, referring to the longleaf pine forest of the Sandhills. "Anything that's that thick is just not healthy. A natural forest is just not that thick. You have to envision an area being burned about biennially. This would keep the forest naturally thin."

So, in a sense, Mrs. Boyd, by completely excluding fire from her forest estate, overprotected it, and allowed it to take an unnatural, and what will ultimately be a downhill course if it is not corrected. As a result, the forest's composition is already changing toward a climax forest of oak and hickory as the old pines die out.

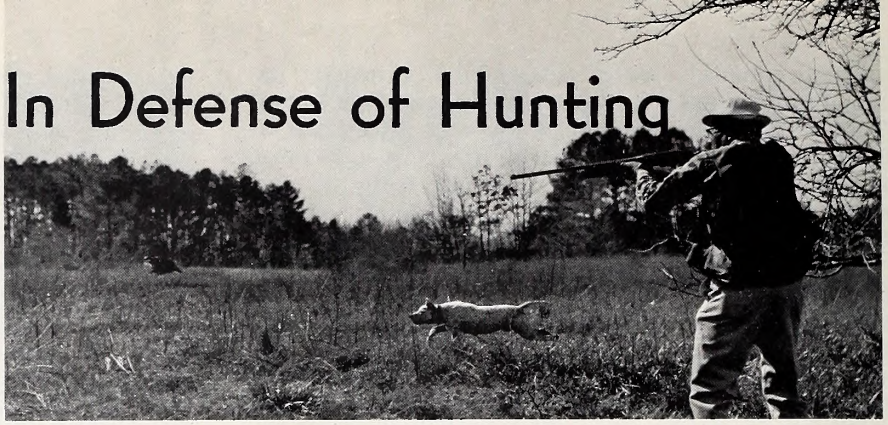
Fire Necessary?

If the area is to be maintained as a natural one, the proper course is to restore fire to the ecosystem, perhaps starting with prescribed, controlled fires, working against natural fire breaks under conditions in which wind and humidity are predictable. In this way the fuel supply that has built up in the long period of fire suppression can be reduced, the scrub hardwoods will be killed, and the natural composition of the forest can be re-restored and maintained. The old pines will eventually die, but a judicious and skillfully executed forest management plan, such as the one being undertaken in Weymouth Woods, would insure that the red-cockaded woodpeckers always have

• **continued on page 27**

* Diameter, breast high

In Defense of Hunting



By H. Eugene Russ, II
Wildlife Biologist, Division of Game

RECENTLY I helped judge a "Wildlife in the Field" essay and poster contest for 4th, 5th, and 6th graders in one of our eastern counties. I was surprised to discover that more than half of the youngsters chose some *anti-hunting theme*. If the contest had been held in one of our urban counties where many people are without prior association with hunting or other outdoor pursuits, an anti-hunting sentiment might have been less surprising; but this was primarily a rural county. This incident serves to illustrate what apparently is a growing opposition to hunting by a number of individuals of all ages throughout the nation.

Hunters are maligned as destroyers of wildlife. Some preservationists and animal lovers are opposed to hunting of any kind and regard the killing of any wild creature as brutal and destructive. The nation's 20 million hunters are said to endanger our wildlife heritage more than the land developers, oil companies, mining companies, and other self-serving interests.

A Better Approach

These anti-hunting people would be better served by protecting wildlife habitat than by opposing hunting. Game species have often been the victims of pollution, land development, and other environmental manipulations. The hunters more often than not were the first concerned with wildlife and the subsequent effects of such changes on wildlife. Hunters' dollars have supported crucial wildlife management programs and habitat acquisition. They have supported and paid for our still abundant game.

Their own recreation requires this support, since sport hunting is dependent on ample numbers of wild animals and their replenishment year after year. If it were not for the hunters, there would be little game left to protect.

Wildlife is a renewable resource that cannot be stockpiled. It must be produced year after year. If hunters do not harvest the annual surplus, it not only wastes the resource but also threatens many species with destructive overabundance. A population greater than the habitat can support harms itself and damages the habitat. During the time when food supplies are critical, animals can strip and destroy vegetation to the extent that normal replenishment is curtailed. Simply stated, they eat themselves out of "house and home."

Some species must be harvested by hunters, or the animals will destroy the habitat needed to produce and sustain them. People with good intentions have often been overly protective with disastrous results to the animals. In many areas natural predators have been reduced or eliminated, and hunters must take their place to keep the population in suitable balance with its habitat.

The Hunter's Role

In the absence of adequate numbers of predators to keep the prey species in check (whether hunters or natural predators), most species of wildlife tend to have a boom or bust population cycle. The population increases somewhat geometrically until it outstrips some habitat requirement and as a result, declines. High density and nutritionally weakened populations of animals encourage disease and parasites that result in sudden dieoffs. Often there is an obvious choice between disease and starvation or hunters removing the excess animals.

Biologists try to determine the largest number of animals that can be removed by hunters each year without depleting the breeding stock or lessening the maximum use of the available habitat. It might be compared to a farmer who saves enough seed to produce maximum yields of his crop the next year without having excess seed wasted.

The white-tailed deer is a prime example of a species capable of swift increases in population. Deer often tend to exceed the carrying capacity of their habitat in the absence of natural predators, parasites, or heavy hunting pressure. A typical management sequence for a newly established deer population in North Carolina might include several aspects. First, hunting is banned for a number of years to maximize the reproductive potential of the herd. When a suitable sized population becomes established, a buck-only season is opened. Since fawn production is more dependent on the female, she is given more protection than the male. Buck deer can usually be taken without depleting reproductive capabilities as would be the case if doe deer were harvested in a similar manner.

Then, when established deer herds reach a point close to the carrying capacity of their habitat or become intolerably destructive to local agricultural crops, an either-sex deer season becomes necessary to protect the health of the herd and habitat or alleviate substantial economic losses. This situation usually develops because the hunting pressure and subsequent annual harvest of deer remain somewhat more constant than the annual increase in the deer population. Before an either-sex season is established, biologists try to determine the number of antlerless deer that should be removed and the approximate number of days necessary to accomplish this harvest. Thus hunters become the best method for insuring compatibility of deer populations, their habitat, and human populations.

Many of our game species with relatively short life spans and high reproductive potentials never become abundant enough to damage their habitat or otherwise threaten their continued existence in an area whether hunted or not. Natural mortality is so high that a somewhat similar sized breeding stock survives each year. This is particularly true of such game birds

The concept of managing wildlife as a crop to be harvested, is often unacceptable to the non-hunter. Yet it is a part of nature itself.

as bobwhite quail and mourning doves. Here hunters harvest game not out of the necessity of keeping the population in healthy balance with its habitat but to harvest a surplus for food and sport that would otherwise be wasted.

Regulations are set to insure that the harvest does not deplete next year's breeding stock. In these productive populations of wildlife, natural mortality and hunting mortality are counterbalanced; one is not added to another. Hunting mortality merely replaces a part of natural mortality in most instances. Thus such populations can withstand heavy hunting pressure without appreciable effects on the next year's production.

In fact, some of our more heavily hunted species are the most numerous today. For example, the mourning dove is hunted in 30 states and now over 20 million doves are harvested annually. Yet the basic breeding population has increased over the last two decades. Disease and weather take a large toll each year with only an estimated 20 percent to 30 percent of immatures and 50 percent of the adults surviving.

Hunting or Habitat Destruction?

Some people tend to blame the population declines of some wildlife species and the extirpation of others, on sport hunting, but this has rarely been true. The only time hunting has been a serious threat to an animal's survival is when commercial exploitation was involved. Market hunters slaughtered millions of wildfowl for urban markets around the turn of the century. Many egrets, herons, grebes, terns, gulls, and ducks of many species were killed solely for the use of their feathers as frills on hats and clothing. Many species of egrets and terns were on the brink of extinction before laws were passed to protect them. Buffaloes were killed for food, hides, in order to starve warring Indian tribes, and in order to make room for crops and farms. Bears and mountain lions were often eliminated from areas because they appeared menacing to people. Wolves were killed because of prejudice and superstition. Coyotes still are being systematically killed in western states.

In spite of the magnitude of much of this wanton slaughter, the greatest blow to our wildlife has been habitat. The amount and productivity of habitat available to a species of wildlife will determine the number of individuals that can be supported. Species needing wilderness habitat have necessarily declined with increasing urbanization and human populations. Other species have become the victims of pollution, land clearing, and man-made environmental changes, but they have not declined because of sport hunting.

Animals such as the cottontail rabbit and white-tailed deer have adapted well to their new environment and have prospered in spite of heavy hunting. Long term declines will continue for species whose habitat is lost whether hunting is prohibited or not. Future waterfowl populations will depend more on the amount of wetland habitat, both in nesting and wintering areas, than on the restrictiveness of hunting regulations. One drained marsh can destroy more ducks and potential ducks than a hunter could legally kill in a lifetime.

Someone might ask whether hunting has benefited or damaged our game species. There are probably more doves, quail, rabbits, and deer than at any time in our country's history. The National Shooting Sports Foundation, an independent research organization, estimates there are 30 times as many deer in the United States today as there were in 1900. This now represents a total population of approximately 16 million animals. In North Carolina the white-tailed deer population is probably higher than ever before. Deer have spread to areas of the state where deer were absent or scarce for many years. The total population is estimated at around 500,000 deer, and last year hunters harvested over 47,500. Wild turkey, beaver, and wood ducks have been brought back from near extinction, by hunter-supported programs.

Who Pays for Wildlife?

Hunters pay the bill for wildlife habitat acquisition, management, enforcement, and educational programs. In 1971 the U.S. hunters' contribution in support of wildlife from the sale of hunting licenses amounted to 108 million dollars. An additional 48 million in federal money was collected through an 11 percent manufacturers' excise tax on arms and ammunition. This single year contribution from hunters totaled five times more than the amount contributed by all conservation groups over the past decade. Hunters contribute another $11,000,000 per year for acquisition and management of wetlands for waterfowl through the purchase of duck stamps. A private sportsmen's group, Ducks Unlimited, has raised more than 15 million dollars for use in constructing nesting wetlands for waterfowl in Canada.

Hunters also purchase land that is used for outdoor recreation other than hunting. A Fish and Wildlife Service study revealed that state game lands purchased by hunter dollars are more heavily used by non-hunters than hunters. Bird-watching, hiking, camping, fishing, and picnicking are some of the outdoor recreations supplied by many of these areas.

Farmers and landowners often benefit directly from the lease of hunting rights on their property to sportsmen and clubs. Good wildlife habitat benefits not only game species but also non-game species dependent on similar habitat. Song birds, chipmunks, frogs, and other such non-game species usually abound in good wildlife habitat.

Yes, it is about time that the anti-hunter took a more serious and objective look at the real problems which face our wildlife and environment. Through coordinated efforts on the part of all conservationists, great strides can be taken to insure that our natural resources are adequately managed and protected. ▲▼

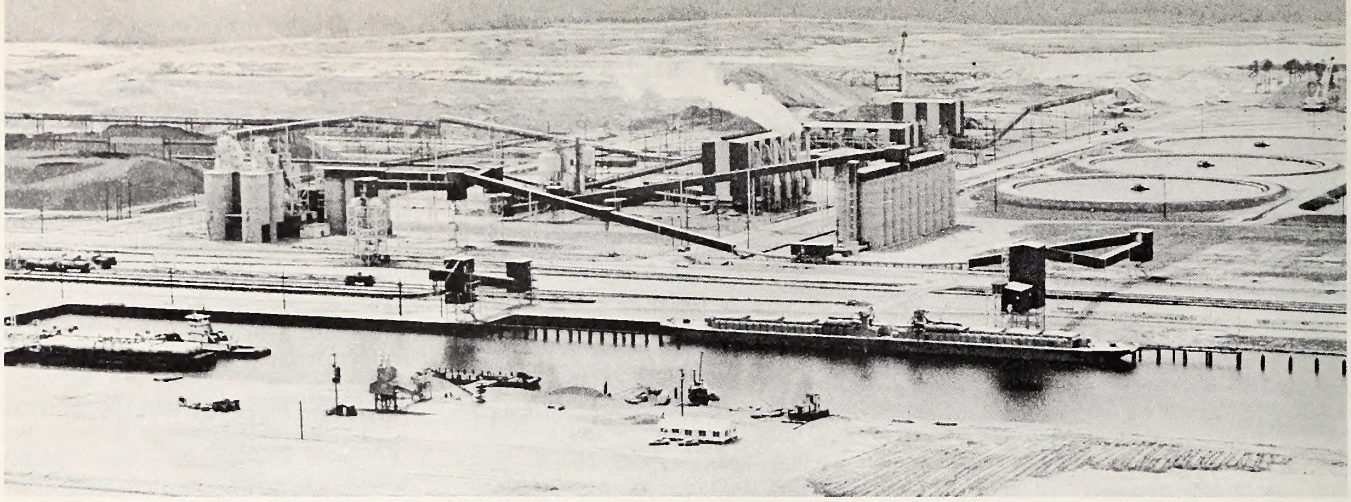


PHOTO BY TOM JACKSON

LAND-USE PLANNERS GET HELP

by Frank Barick

PHOTO BY TED DOSSETT

• *Land-use and natural resource planning is now underway in many counties and communities across North Carolina, and until now, one of the biggest problems for planners has been finding accurate information. Information about wildlife and environmental considerations has been particularly elusive.*

"If we put an industry on this spot, what will it do to wildlife and the environment?" planners have asked. "What are the dangers and pitfalls? Where can we find out?"

Obviously, without such information, comprehensive land-use planning is impossible. That's where this new program will help.

IN August of 1974, the N. C. Wildlife Resources Commission initiated a new program to strengthen wildlife conservation by establishing a section of Interagency Wildlife Coordination in the Office of the Director. This action was taken to counter increasing pressure of development threatening the perpetuation of wildlife as a source of recreation for Tarheel nature enthusiasts. The move was also in consonance with reorganization of our parent agency, the Department of Natural and Economic Resources, designed to foster economic development in harmony with environmental preservation.

Traditionally, the major emphasis of the Wildlife Commission's various programs has been physical-action oriented: *management* of fish and game, *development* of boating access, and *enforcement* of regulations. In this new program, the major emphasis will be *information-action* oriented. The new program will involve developing and providing information to land-use planning agencies that will enable them to include wildlife conservation in the planning process.

The new program will develop guidelines for use by commission biologists in appraising the potential impact of development programs on wildlife resources. It will evaluate environmental impact statements to assure that wildlife resources are given adequate recognition. It will advocate research designed to develop information helpful to wildlife conservation through land-use programs. It will monitor other current research in this field and adapt its findings to conservation of wildlife in North Carolina. It will formulate proposals for legislation and regulations pertaining to wildlife aspects of land-use planning, rare and endangered species and environmental preservation.

The major contribution to wildlife conservation of

this new program will be through land-use planning. This approach is particularly timely because of the current emphasis on land-use planning by the federal, state, regional, county and municipal levels of government. Land-use planning is necessary because we have come to realize that our resources are no longer limitless. A reassessment of resource use is urgently needed and land-use planning helps to bring into focus available alternatives so that we can select the most viable ones.

There is a growing realization that in the battle between industrialization and nature, nature will win out in the end and that the survival of man is more closely aligned with and dependent upon nature than with industry. If we are to survive, it is essential that we bring industry into closer harmony with nature. The way to do this is to identify and curb or modify those elements of industrialization that degrade our environment and to provide for use of our land in a way that will accelerate rather than limit the renewal of our natural resources.

We are fortunate in that unlike some of the excessively industrialized northern states, North Carolina is not yet over the brink. We still have time to save our state as the "goodliest land under the cope of heaven."

Enactment of the State Land Policy Bill by the last legislature calls for classification of our lands based upon their physical characteristics and production capability, orderly growth and development, protection of resources in areas of environmental concern, and a focus on problems of areas impacted by key facilities and other large-scale developments.

Passage of the Coastal Area Management Act by the same legislature provides a framework for preservation of natural resources through orderly planning of land-use in our 20 easternmost counties. It provides for identification of fragile elements of eastern ecosystems and encourages maintenance of natural processes. It also provides for identification of highly productive agricultural and timber areas and dedication of their use for these purposes. It is also the stated objective of this act to provide for industrial development in harmony with preservation of natural resources.

Responsibility for guiding and coordinating statewide land-use planning rests in the State Planning Division of the Department of Administration. To bring this process closer to the people and to provide a means of assistance where such service is beyond the capability of local government, 17 multi-county planning regions were established for North Carolina. Many counties and municipalities are also developing their own planning agencies thereby bringing the land-use planning process closer to home.

We have been in contact with land-use planning agencies at each of these levels of government and without exception have met with enthusiastic support for inclusion of wildlife conservation elements in the land-use planning process. In each case there was an apparent lack of information about the status of wildlife resources, its distribution or value. There is an obvious need to identify for each land-use planning agency the wildlife potential in its area of jurisdiction, to indicate what species are present and their value to hunters and fishermen as well as to those who derive their pleasure solely from communion with nature. It is also important to identify habitats that are particularly important to wildlife and land-use practices that adversely affect wildlife resources.

In many situations, wildlife conservation is strongly identified with conservation of other resources—soil, water and timber. Wildlife needs clean water and can often benefit from accelerated timber production. One concept especially worthy of emphasis is the dedication of flood plains and flood ways to the production of these three resources—timber, water and wildlife—as well as for waste water disposal. Many of our present municipal land-use problems stem from our failure to recognize this concept.

Much of the information on wildlife resources to be used in interagency wildlife coordination is at hand, accumulated from field surveys conducted by our Division of Game and Division of Inland Fisheries. Some of it is in a form that can be used directly, but much of it must be adapted to these new purposes, and much remains to be developed through additional field survey work and original research.

In addition to development of "base line" wildlife resources information for the land-use planning process, this program will participate in the State's effort directed at environmental surveillance. This involves review of environmental impact statements on such projects as power generating facilities, dredging and filling of swamps and estuaries, stream channelization, highway construction and other major developments that have a potential for adverse environmental impact. Our efforts will be directed toward development of project modification to lessen such adverse impacts and to suggest appropriate mitigation for unavoidable destruction of wildlife habitat.

Determination of environmental impact in most cases requires field inspection of the development site. Since such projects are being continually proposed in all parts of the state, inspection is conducted by many different individuals of our field staff. In order to provide uniformity of evaluation and equitable consideration of all projects, it is important that they be judged in accordance with established standards. Development of such evaluation standards has been initiated. For each type of project, these guidelines will define the limits of the Wildlife Commission's legal authority, identify elements to be scrutinized and articulate a philosophy of application.

Since interagency wildlife coordination efforts will be largely advisory in nature, it will have a relatively limited staff. Office personnel at the present time consists of two full-time employees and one part-time consultant. In addition, two field biologists and one biologist-technician have been employed to conduct special field surveys.* Despite its limited staff, the interagency wildlife coordination program has the potential for benefiting wildlife conservation on all the lands and waters of the state through land-use planning and environmental surveillance. Reports of progress in these areas will be published from time to time. ▲▼

---

* Frank B. Barick and T. Stuart Critcher, formerly Chief and Assistant Chief, respectively, of the Division of Game have been assigned similar positions in the Interagency Wildlife Coordination Section. Dr. Frederic F. Fish, formerly Federal Aid Coordinator in the Division of Inland Fisheries is acting in a Consultant capacity. P. Jack Wingate, formerly with South Illinois University and Cleve J. Cowles, formerly with Virginia Polytechnic Institute and State University are the two field biologists. Norwood White, a recent graduate of Lenoir Community College is the biologist technician assigned to the field staff.

Stem to Stern

BY ED JENKINS

● Selecting the right boat is as important today as purchasing the family automobile.

Two things that should be foremost in the prospective buyer's mind when selecting a boat are: how the boat will be used, and one's budget.

One should know where and how he plans to use a boat before he decides on a particular model. A bass boat may suit the angler's fishing needs ideally, but if he and his family enjoy cruising and skiing, as well as fishing, perhaps a runabout would be a more practical choice.

Look beyond the initial cost of the boat, motor and trailer. Take into account all items that may be required such as safety equipment, jack and spare wheel for the trailer, extra fuel tank, water skiis, and other desired items. Many boat dealers sell boats as a package deal with the boat fully equipped. Boat insurance and any equipment added to the vehicle which will tow the new boat will be extra. A larger boat may require a trailer hitch, heavier suspension system, larger radiator, and transmission cooler to be installed on the towing vehicle. One should check his vehicle owners manual to see exactly how much weight his vehicle is designed to tow and compare it with the total weight of the boat, motor, trailer, and equipment before a larger boat is purchased.

Hull design is an important factor to be taken into consideration when purchasing a boat. Each design has certain performance characteristics. By comparing the advantages and limitations of each hull design, one can find the hull most suited for his needs.

What type propulsion system is best for the boat? This depends upon the size of the boat and individual preference. If the boat is small (less than 16' in length), an outboard motor is the answer. An inboard engine is the correct choice for large cruisers and yachts. In between these two sizes, a decision must be made between outboard, inboard/outdrive, and possibly even jet water pump.

On smaller boats, outboard motors tend to give better fuel economy, weigh less, and have a lower overall purchase price. Outboards do not produce as much torque as inboard/outdrives, and when mounted on larger boats, they may consume more fuel than an inboard/outdrive. If an individual goes to twin outboards to match the power of an inboard/outdrive, the initial cost as well as the operating costs will be higher. Many feel the inboard/outdrives are more reliable than outboards, while others point out the greater danger and occurrence of fires aboard inboard/outdrives.

Outboard motors should be carefully matched to the boat. A boat is designed to be operated with an outboard motor in a certain size range. When a larger engine than recommended is used, the boat may be operated beyond its safe speed which may lead to loss of control or worse. Federal law requires capacity rating plates, stating the maximum safe load and horsepower, be attached to all new boats. While it is not against the law to install a motor that exceeds this recommendation, it would certainly be an unwise decision. On the otherhand, a boat that is underpowered may steer hard, drag, and consume more fuel than it would if it had a larger engine. A marine dealer can assist in selecting the size engine that has proven to be a good match for a particular boat.

Water jet powered boats are strictly high performance boats. They are more expensive to purchase and operate than outboard or inboard/outdrive powered boats, and they handle poorly at slow speeds.

While it may not be possible to test drive the exact boat and motor you are interested in purchasing, you should try to go out on the water with a similar rig and see how it handles and rides, making certain that it will perform as desired under conditions similar to those in which it will be used. ◆

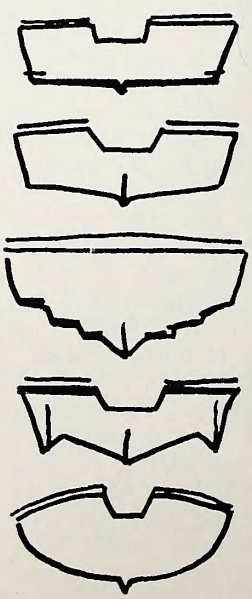
Flat bottom hulls plane easily and faster speeds can be attained with them. Flat bottom boats are rough riding boats and will pound in rough or choppy water. A skeg which may be bothersome when beaching, loading, and unloading is required to keep the boat from weaving. Many home-made skiffs, small runabouts, and racing boats are flat bottom hulls.

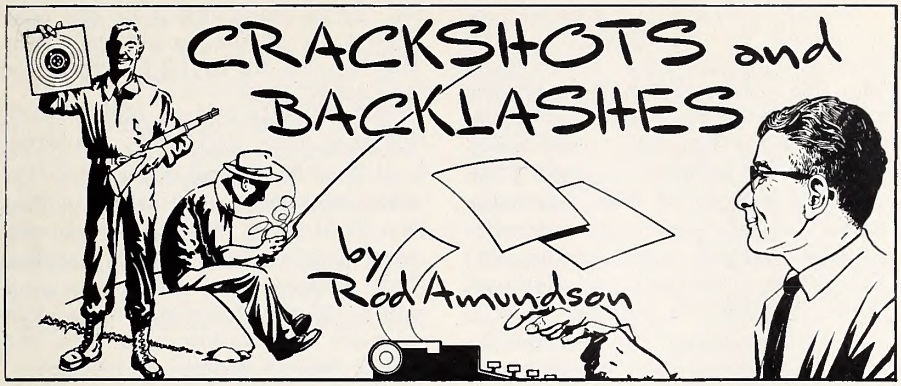
Shallow-V hulls are a little slower than flat bottom hulls but offer a softer ride. Many small and medium size runabouts utilize this bottom design.

Deep-V hulls are excellent hulls for use in rough water, because the hull slices into the waves instead of bouncing over them. It is, however, a low performance hull and not as well suited for use at fast speeds.

Tri-hulls or cathedral hulls offer excellent stability and have become very popular in the past few years. While its ride is not as smooth in rough water as a deep-V hull, it is perhaps the best overall hull design for individuals with varied boating interests. This hull design is used on most boats with the popular bow rider design.

Round bottom hulls are displacement hulls which are designed to cut through water rather than planing over it. It is the best hull design for slow speed operation and is used on heavy or slow operating boats such as tugboats, sailboats, and canoes. Because it does not perform well at fast speeds and has a tendency to roll, this design is rarely used on modern day runabouts.





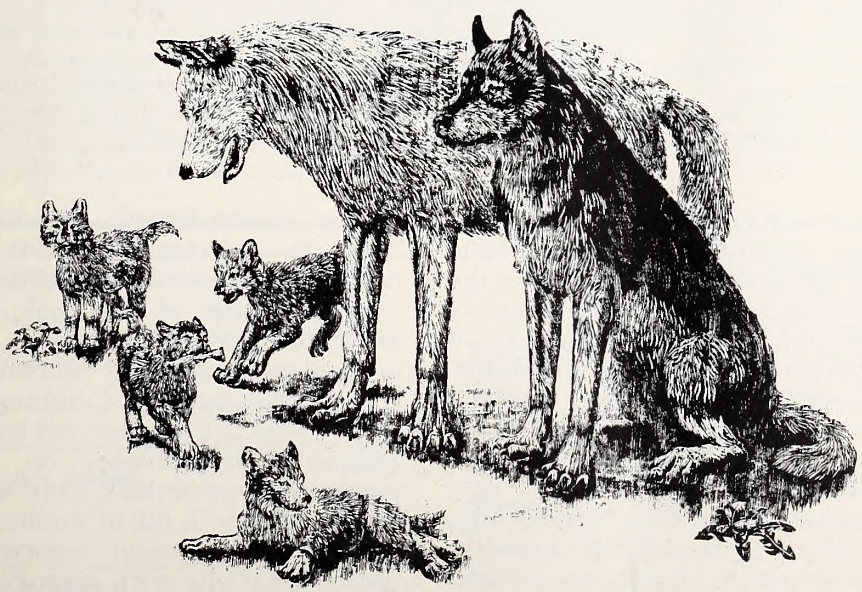
Endangered species protection is emerging as one issue around which environmentalists of varied persuasions and the general public are rallying in common concern. Public education efforts span the gamut from Project Jonah to 7-11's Slurpee cup campaign, as housewives and hunters agree that animal species should be allowed to complete the process of natural selection, not be shoved off the board prematurely by overdevelopment, environmental abuse and human disregard for the rights of other living things.

This interest comes at a critical time. Over 100 American fish and wildlife species fight daily for the existence of their kind, and some are losing.

The Washington, D. C.-based, nonprofit Center for Environmental Education aims to increase the endangered species protection cadre through the production of consumer-oriented items backed with sound research. These interpretive materials use art as a vehicle to draw both conservationists and the general public into the endangered species arena.

The Center's new TRACKS IN TIME wildlife series reflects this goal. Backbone of the effort is a 1975 wall calendar featuring 12 endangered American animals (plus one that came back!).

Pennsylvania wildlife artist Martha Cawley was commissioned to portray the animals with a series of original woodcuts. Species illustrated include the American alligator, southern bald eagle, Florida panther, peregrine falcon, brown pelican, eastern timber wolf, black-footed ferret, Sonoran pronghorn, California bighorn, ivory-billed woodpecker, southern sea otter and California condor.



This is the eastern timber wolf by woodcut artist Martha Cawley. The woodcuts sell singly, in a complete portfolio (set of 13) or as a wall calendar. Contact: Center for Environmental Education, Inc., 1621 Connecticut Ave., NW, Washington, D. C. 20009.

Printed in vivid natural colors on high quality ivory paper, the 11" x 17", spiral-bound wall calendar sells for $4.00. Bulk quantity discounts make the calendar suitable for fund raising resale.

To bring the TRACKS IN TIME message to wildlife art enthusiasts, a limited edition of the 22" x 26" original woodcuts have been handprinted, signed and numbered by the artist. They can be purchased from the Center singly or in a complete portfolio (set of 13).

TRACKS IN TIME proceeds will be used to further the organization's public education programs. Supported by project funds, publication sales, and tax-deductible contributions, the Center combines skills in writing, environmental interpretation, art and design to translate technical environmental information into attractive and stimulating educational materials for students and adults.

For TRACKS IN TIME brochures (please specify consumer or bulk sales), calendars or woodcuts contact: Center for Environmental Education, Inc., 1621 Connecticut Ave., NW, Washington, D. C. 20009.

Ticks

Dear Sir:

I think, as a zoologist who has had some experience with ticks on the eastern seaboard, I can make it a little clearer why ticks flourish in a new subdivision. The tick that carries the Rocky Mountain spotted fever has as its first host small rodents; but, after they molt into the second stage and later, these ticks may utilize almost any mammal. Hence, as long as there are adequate mice the tick population may increase. When people bring in pets which increase in number, ticks have more larger mammals in the area. Complete development, on the other hand, should normally diminish the population of wild rodents and cause a reduction in the tick population.

Charles H. Blake
Hillsborough

Outdoor Books Reviewed

The torrent of books about duck hunting continues. And interestingly, there is something new and fascinating in each and every one, especially for the hunter who does his own work in waterfowling and to whom every aspect of his game is a source of wonder and excitement. Two recent arrivals on

KNOW YOUR PROTECTOR

Edward G. Forehand

Wildlife Protector Edward G. Forehand Jr. was born May 31, 1949 in Elizabeth City, North Carolina. He is the son of Mr. and Mrs. Edward G. Forehand Sr. of South Mills, North Carolina. Gary graduated from Camden County High School in June of 1967. He completed a four year apprenticeship at the Newport Shipbuilding and Dry Dock Company of Newport News, Virginia in October of 1971.

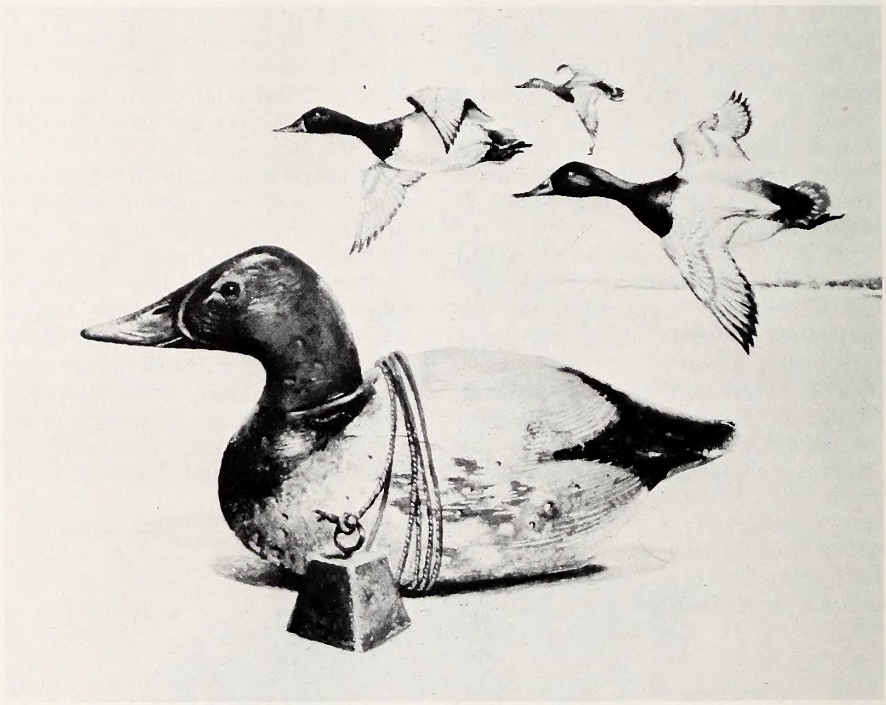
Gary completed the Pre-service Training School for wildlife protectors at the Institute of Government in Chapel Hill. He was employed as a Wildlife Protector Trainee in November of 1971 and stationed in Ayden. In January of 1972 he was transferred to his present station in Creswell, N. C. Since his initial employment he has completed all of the In-service Training Schools for Wildlife Protectors at Chapel Hill.

Mr. Forehand is a member of the Southeastern Association of Game and Fish Commissioners, Law Enforcement Section; North Carolina Association of Wildlife Law Enforcement Officers; North Carolina Law Enforcement Officers Association; North Carolina State Employees Association; and is a certified hunter safety instructor.

Gary's primary work area consists of a portion of both Washington and Tyrrell counties.

Mr. Forehand is married to the former Lois Marie Sanderlin and they have two children, Paula, six and Billy, four.

Several months ago, the U. S. Fish and Wildlife Service adopted a new emblem, shown above. It exemplifies the stewardship of not only fish and game, but of waters, land and air. This year's winning duck stamp design is from a drawing by James P. Fisher and depicts an old canvasback decoy and three flying ducks.



my desk represent the writings of A. C. Becker Jr., sports editor of the Galveston *Daily News*. Becker has written a number of articles for outdoor publications and has some other books to his credit, including three on Gulf coast fishing and at least one other hunting volume. But to read these two books is to believe that duck hunting is his major interest in the outdoors.

Decoying Waterfowl (A. S. Barnes Co. Inc., Cranbury, N. J., 1973) is by far the more intriguing of the two. Becker is of the school that believes in the necessity for accurate and meaningful placement of decoys. He has studied the decoying habits of the waterfowl common to the Mississippi and Central flyways in some detail. I do not recall having seen more factual information on this side of duck hunting before. Each species is analyzed and decoy placements set accordingly. What he says makes sense. The hunter who follows these sets will do better over the long haul than one who haphazardly scatters his stools.

Some sections of the book are weak. Most of the information on geese refers to snow and blue geese, a far cry from the mighty honker of our flyway. His section on migratory corridors could well have been omitted. The remainder of the book is standard "how to" writing.

Waterfowl In The Marshes (A. S. Barnes Co., Cranbury, N. J., 1969) is a smaller and less comprehensive volume on a particular type of duck hunting. There is quite a bit of duplication of the material reported above, especially with regard to snow and blue geese. And yet I know of no other duck hunting book that tells you how to walk a marsh, or of the dangers one may find in this particularly

rich portion of our outdoor environment. He rightly points out that the chief danger in a marsh lies in the species *Homo sapiens*. Whether you yourself get lost in a fog or step into a deep bog, or whether some knothead blows your hat off thinking you are a duck matters not. It's you and I who make a marsh dangerous, not the moccasins and 'gators.

An interesting sidelight to these two books becomes apparent in this volume. Becker mentions time and again the decreasing numbers of Canada geese. There is no reference to the fact that his geese are short-stopping at the Horicon Refuge far to the north, even as our Atlantic Flyway Canada's are short-stopping in the Chesapeake region. Nor does he seem up to date on the rediscovery of the giant Canada goose, *Branta canadensis maxima*. But these are minor points. His anecdotes are a pleasure to read. Why does not some one write a similar book about Carolina duck hunting?

R. Wharton Gaul, M.D.

RARE BIRDS

• continued from page 19

a home here in their replacements.

"The main thing is to burn and clear the understory. They automatically exclude longleaf pine from regenerating itself. They have to have sun and exposed soil. If the forest is allowed to continue this present course, the entire forest will become an oak-hickory forest. It will happen to all this sooner or later. You have dogwood — the first state. In a hundred years the pines will start to die out. You would leave the bigger oaks for mast production. In a natural forest, where fire plays a vital role, the oaks would get very big because of fire. Even catastrophic fires are better than no fires at all," concludes Carter as we walk through a mixed pine-hardwood stand.

So, as paradoxical as it may sound, the best way to insure the continuation of this area as a natural longleaf forest is to carefully burn it.

Moreover, the exclusion of fire has had a detrimental impact on the estate's wildlife. "Shadings eliminate the legumes and many other grasses and flowering plants. They are very important to your game. As they go your squirrels and quail may diminish. You have to burn the woods to maintain quail," states Carter. In addition, the hardwood understory on much of the estate is growing too tall for the red-cockaded woodpeckers to tolerate. "The woodpeckers will not live in a cavity that is below the level of the understory. Most of the nests are quite high because the understories are quite high," notes Carter. In many places, the blackjack and turkey oaks are so thick that they have little energy for acorn production after competing with one another for growing room. "You would leave the large oaks for mast production," says Carter, ever mindful of the needs of wildlife, in this case squirrels.

Once the hardwoods are killed, even the old pines will be able to regenerate themselves. "They're viable. They can still put out the seeds," says Carter as we stand gazing at one grove of veterans. Pointing to a tree that the woodpeckers have begun to peck on recently, Carter states, "A nest tree can take up to five years to start. They have to let the sap solidify as they proceed, otherwise the cavity will fill with sap. They have to think ahead of time if the nest tree is dying out. That was probably a nest tree this year. See how reddish the bark is; that's from landing on it," adds Carter, pointing to another tree.

The Future

What does the future hold for this forest estate with its rare birds and ancient trees, now that it is the property of Sandhills Community College? Plans are still indefinite, but Mrs. Boyd's will calls for four trustees to administer it on behalf of the college, with a $75,000 fund set aside to defray costs. For its part, the community college has contacted Carter about the woodpeckers, and has been in touch with North Carolina State's School of Forest Resources about managing the woodlands. So, there is every indication that this unique natural area will receive the care that it deserves. For his part, Carter hopes that this session of the North Carolina General Assembly will enact an endangered species act modeled on the Federal Endangered Species Act of 1973 so that the red-cockaded woodpecker eleswhere in North Carolina receives the protection it deserves. ⬍⬍

ADDRESS CHANGE NOTIFICATION

Name_____

Old Address_____

_____

_____

New Address_____

_____

_____

Zip Code_____

IMPORTANT:

Enclose present Address Label

Please notify us promptly of change of address.

Use this blank to subscribe NOW — $2.00 a year

Add $1.00 for overseas postage

No stamps, please

WILDLIFE IN NORTH CAROLINA **New ☐**

325 N. Salisbury St., Raleigh, N. C. 27611 **Renewal ☐**

I enclose $_____; send me WILDLIFE IN NORTH CAROLINA for_____years starting with the earliest possible issue.

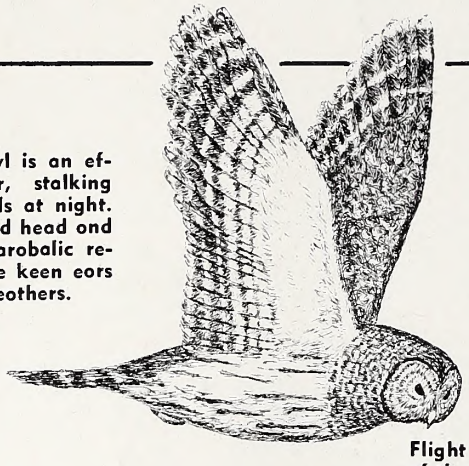
Name_____

Street or Route_____

City_____ State_____ Zip Code_____

Due to rising production and printing costs and likelihood of periodic increases in the subscription price for WILDLIFE, a limit of FIVE YEARS is being placed on new and renewed subscriptions.

The borred owl is an efficient hunter, stalking smoll mommols at night. The odd shaped head ond face oct os parobalic reflectars far the keen eors beneoth the feothers.



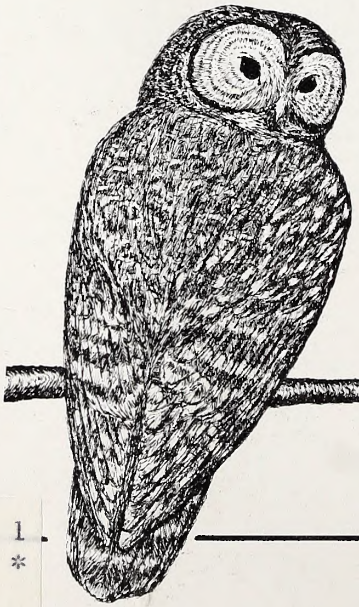
Flight is almast tatolly silent because af the soft edges af the primory feothers. Most ather birds hove rother hord-edged wing feathers creoting a whistling saund.

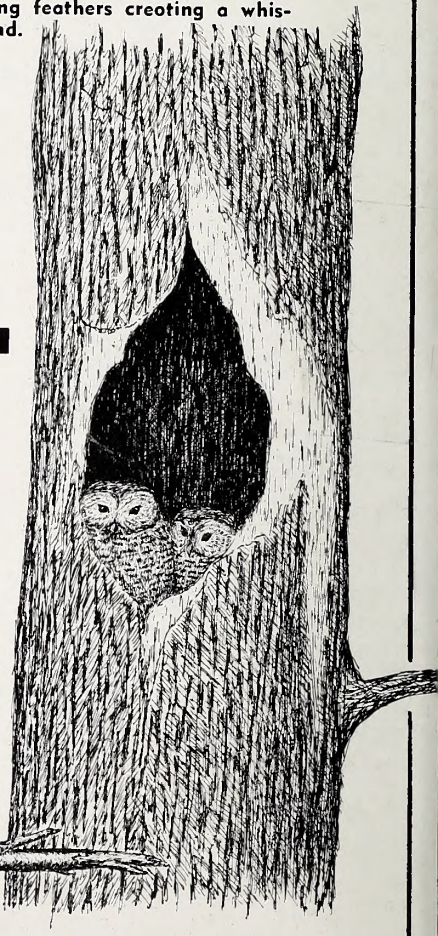
With a wing spreod from tip to tip af almast faur feet, the borred awl is o lorge bird. It is the only dork brawn awl with dork eyes in eostern United Stotes. It prefers waaded lawlonds and is faund in centrol ond western Narth Corolino.

THE BARRED OWL

Twa geagraphic roces of the borred awl ore faund in the eostern U.S. The narthern voriety which hos feothering an the taes (lower) ond the Florido borred awl which locks the feothering on the taes (tap). Strang, shorp tolans are used for gripping prey.

Nesting tokes ploce in March ar April, usually in o hollaw tree. An obandaned hawk's nest is used rorely far the twa white eggs. This owl olang with all of its relatives, is protected by law ond is a beneficiol bird.





Chris Marsh

STATLIBR* 1SAMPLE9999 1
DIV OF STATE LIBRARY *
109 E JONES ST
RALEIGH NC 27611

LITHO BY THE GRAPH.

North Carolina State Library
Raleigh
Doc.
N. C.
Doc.
ER
45
39/3

Wildlife IN NORTH CAROLINA

MARCH 1975

When the Angel made Shad
The Devil was mad
It seemed such a feast of delight.
So to ruin the scheme
He jumped in the stream
And stuck in the bones out of spite.

When the strawberry red
First blushed in its bed
The Angel looked down and was glad
But the devil tis said fairly pounded his head
For he'd used all his bones in the Shad.

Author Unknown.

STATE OF NORTH CAROLINA

JAMES E. HOLSHOUSER, JR.
GOVERNOR

DEPARTMENT OF
NATURAL AND ECONOMIC RESOURCES
JAMES E. HARRINGTON, JR.
SECRETARY

NORTH CAROLINA
WILDLIFE RESOURCES COMMISSION

ROSCOE D. SANDLIN, CHM. _ JACKSONVILLE
JAY WAGGONER, V. CHM. _ _ _ _ GRAHAM
ROY A. HUNEYCUTT, SECY. _ _ _ _ LOCUST
W. K. ANDERSON _ _ _ _ _ _ _ NEWLAND
WALLACE E. CASE _ _ _ _ HENDERSONVILLE
D. JACK HOOKS _ _ _ _ _ _ _ WHITEVILLE
DR. LATHAN T. MOOSE _ _ WINSTON-SALEM
V. E. WILSON, III _ _ _ _ _ _ _ ROCKY MT.
ORVILLE L. WOODHOUSE _ _ _ _ GRANDY

CLYDE P. PATTON
EXECUTIVE DIRECTOR

EUGENE E. SCHWALL ROBERT B. HAZEL
ASSISTANT EXECUTIVE DIRECTORS

DIVISION CHIEFS

REX GARY SCHMIDT _ _ _ _ _ _ EDUCATION
RICHARD B. HAMILTON _ _ _ _ _ _ _ GAME
W. DONALD BAKER _ _ _ INLAND FISHERIES
DONALD E. CURTIS _ _ _ _ _ PROTECTION
CHARLES R. FULLWOOD, JR. _ MOTORBOATS AND WATER SAFETY

The Editor gratefully receives for publication news items, articles, and photographs dealing with the North Carolina out-of-doors, but reserves the right to reject materials submitted. Full credit is given for all materials published.

Have you moved recently? Change your address promptly. Either send in an old mailing label from your magazine along with new address or type or print complete old label information exactly as it appears on your magazine.

WILDLIFE IN NORTH CAROLINA is published at the Wildlife Resources Commission offices, Albemarle Building, Raleigh, N. C.

Phone Number AC 919/829-7123

• • •

Second class postage paid at Raleigh, North Carolina 27611.

• • •

SUBSCRIPTION RATE—$2.00 per year (12 issues). Add $1.00 for overseas postage except APO, Canada and U. S. possessions. Back issues —$.25 per copy plus $1.00 minimum for handling and mailing; back issues may not be available. Send check or M. O. payable to WILDLIFE RESOURCES COMMISSION. Stamps cannot be accepted. Any employee of the Wildlife Resources Commission may accept subscriptions, or send to WILDLIFE, Albemarle Building, 325 N. Salisbury Street, Raleigh, N. C. 27611.

Wildlife circulation this issue 87,101

Wildlife IN NORTH CAROLINA

The official publication of the NORTH CAROLINA WILDLIFE RESOURCES COMMISSION, Raleigh 27611. A monthly magazine devoted to the protection and restoration of our wildlife resources and to the improvement of hunting and fishing in North Carolina.

VOL. XXXIX NO. 3 MARCH, 1975

IN THIS ISSUE

Smoky Mountain Walk
by Ron Gestwicki ..... Page 4

Will The Chestnut Ever Return?
by Jim Dean ..... Page 7

River Herring, a Vanishing Resource
by Harold Tyus ..... Page 8

Down East Winter Stripers
by Jim Dean ..... Page 10

Resource-O-Gram ..... Page 11

John H. Kerr Reservoir ..... Page 12

Kerr Bass in The Spring
by Bob Gooch ..... Page 14

Woodland Miniatures
by Allein Stanley ..... Page 16

Doves in Our Pine Tree
by Dwight L. Peterson ..... Page 18

Stem to Stern
by Ed Jenkins ..... Page 21

All in Day's Work
by Bodie McDowell ..... Page 22

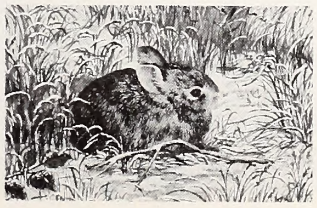
Objective: Healthier Deer
by Tom Monschein ..... Page 24

Crackshots and Backlashes
by Rod Amundson ..... Page 25

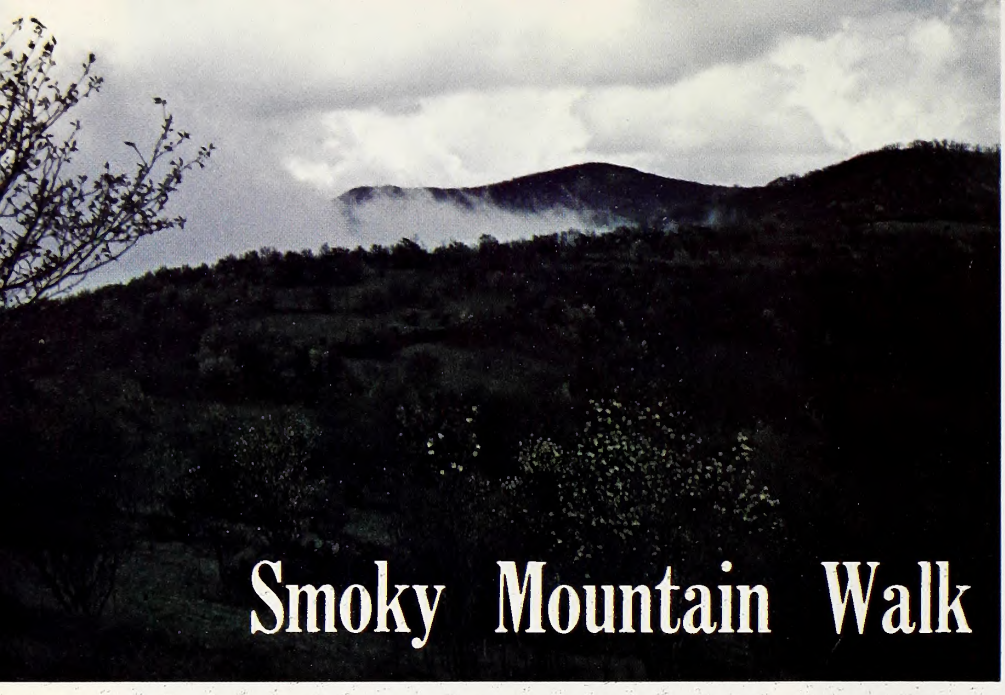
EDITORIAL STAFF

DUANE RAVER _ _ _ _ _ _ _ _ _ _ EDITOR
LUTHER PARTIN _ _ WRITER-PHOTOGRAPHER
JIM DEAN _ _ _ _ WRITER-PHOTOGRAPHER
TED DOSSETT _ _ _ WRITER-PHOTOGRAPHER
ROD AMUNDSON _ _ CONTRIBUTING EDITOR

An objective of all levels of government should be to achieve and sustain a balance of the social, ecological, and economic benefits derived from natural resources. Without such balance none of the factors on the scale will be worth weighing.



Spring? Well, this half-grown cottontail is beginning to wonder, as he sees the new foliage nearly covered with a late, wet snow. Spring is a critical time for wildlife, and unless we help with creating better habitat, wild things suffer. Painting by Debbie Owen.



Smoky Mountain Walk

Black Bears, Wild Pigs and Other Surprises on a Return Trip to the Smoky Mountain Tops

by Ron Gestwicki

THOREAU wrote that he could not preserve his health and spirits unless he spent at least four hours a day sauntering through the woods and over hills and fields, absolutely free from all worldly engagements.[1] He asked what human life would be like without forests, those natural cities?[2] We have lost our forests, or almost all of them, and lost sight of their value. Today's Sunday morning paper lists 26 goals for Charlotte as established by its citizens.[3] Not one of these goals has reference to preserving pieces of our woods to walk in. Fortunately years ago some wiser citizens preserved the last piece of primeval wilderness in the East, and I returned for a five day walk along the tops of the Smoky Mountains.

Part of the joy of Thoreau's walking came from the vastness of the woods he could enjoy and, consequently, the new things he could encounter, even if he walked every day. "My vicinity affords many good walks," he wrote in his essay on walking, "and though for so many years I have walked almost every day, and sometimes for several days together, I have not yet exhausted them."[4] In his **Walden**, which backpackers carry on

The Appalachian Trail continues to provide the hardy hiker with surprises —mostly pleasant. It is work, but refreshing labor at that. Many of the shelters (left) along the trail are protected from curious "visitors" by heavy fencing.

the trail along with the New Testament, he said that "We should come home from far, from adventures, and perils, and discoveries every day, with new experience and character."[5] Since this was a return trip to the Smokies, I was a bit apprehensive about whether there would be anything new on the trail. What follows are descriptions of the surprises I found on the Appalachian Trail between Clingman's Dome and Cade's Cove.

There is one thing every backpacker wants to see in these mountains and that's Smoky the Bear. This year we were not disappointed — the bears were out, according to a park ranger. At Siler's Bald Shelter we saw them.

The first sighting came just after everyone in the shelter had settled into their sleeping bags. Fortunately, one old hiker from Georgia, looking for his first bear, spotted it outside the shelter. We would have seen him longer except everyone turned on his flashlight and that drove the bear away. Lesson one — sometimes it's better to do less to observe more.

Fortunately we were to have another chance at 5:30 the next morning when a mother bear and two cubs visited the shelter. I did not see the mother in the early twilight, but the two cubs were a delightful sight. Seeing them was surprise enough.

But the surprises continued. As we continued south we began to hear stories about wild pigs. I had seen wild boar in Africa but had never associated them with the Smokies. We asked those on the trail more about them. The stories were both about wild boar — small with tusks — and wild pigs, large and perhaps with or without tusks. Wild pig became the next sight to be on the watch for.

From time to time along the trail we had seen parts of the woods' floor turned up. We assumed this was the work of bears. Now it became clear that it was the work of another animal — one who rooted in search of food. Especially plowed up was the land near the Derrick Knob Trail Shelter and in an evening saunter we saw them — large, long black hair (wet since it had just finished raining) and straight long tail. This was the wild pig, apparently descended from tame pigs released by early settlers. Five were seen, a group of two chasing off a group of three. This was the wild pig; are there also wild boar in these hills?[6]

Other animals seen on this walk included three white-tailed deer, the always present field mouse (one member of our party had the unique experience of feeling the cold nose of a mouse against his cheek one night, and he has verified that a mouse's nose is indeed wet!) and the first snake in two walks — a rat snake, around the shelter, perhaps because of the mice.

My major interest was birds. I was hoping to see new species but we were too high for the large variety of woods' birds. Instead the walk gave me another opportunity to become at home with what I call the "ridge birds," those at home on the ridge of the Smokies at elevations in the 5000-6000 foot levels. There were both similarities and differences with the birds seen last year, as well as mysteries solved and unsolved.

The first mystery came the first day on the trail when we were unaccustomed to the sounds of nature and were just leaving the sounds of the unnatural city behind. I heard a dull putt-putting sound in the distance and turned toward it thinking it was a bird. I felt a little silly when I realized it was only one of the motorcycles on the road to our departure point at Clingman's Dome (6643 feet and highest peak in the Park). I dismissed the next putt-putting sound I heard, but they persisted even as we got to the first shelter and miles from where we should still hear motorcycles. The group theorized — was it a natural sound or a mechanical sound? If natural, was it living, or perhaps earth tremors coming at regular intervals?

Then it dawned on me that we were hearing the drumming of the ruffed grouse, the large bird I had not seen or heard on the trail last year and did not associate with the South. Sure enough, next day on the trail, still in the northern evergreens that grouse like, we saw one fly off the trail. Their drumming complements a display pattern by which the male attracts the female. The "drumming" is produced by the rapidly beating wings.

We continued to hear the drumming until we passed out of the predominantly coniferous woods into mile after mile of budding beech trees. These hardwood ridges are quite unlike the predominantly evergreen northern section of the Appalachian Trail in the Park and perhaps account for some of the variations in the "ridge birds" that I noticed.

This year I did not see raven, wild turkey, nuthatches (perhaps one sighting), brown creeper, golden-crowned kinglet, downy woodpecker, winter wren (unless I don't know the song well enough) and the bay-breasted warbler. The absence of these birds is probably due to the relatively higher, moister and evergreen character of the northern section of the trail.

New to the ridge this year were: catbird, rose-breasted grosbeak, grouse, brown thrasher, chestnut-sided warbler, palm warbler, horned owl. These plus some of the birds seen both years — chickadee, junco, robin, swift, rufous-sided towhee, veery, Canada warbler, hairy woodpecker — provided a wealth of song in the cool mountain air (not down to freezing as this same week last year).

Since it was Spring up here, this was a time for staking out territory, mating, and nest building. I looked for the junco nests as last year but found none. Instead I was surprised to find two partially built nests of the solitary vireo, a bird seen throughout the trail. This is a very tame vireo.[7] I was able to approach one of the nests in a low rhododendron in a spring area, see the nest being built out of beech bark strips and lichen from the beech trees, and stand quite close while the pair of vireos continued their nest building activity.

Other birds were seen as we descended out of the mountains, including this year, the somwhat rare pileated woodpecker. The birds

1 Essay on "Walking" in *Excursions* by Henry David Thoreau (New York: Corinth Books, 1962), P. 164.
2 "A Winter Walk," *Ibid.*, p. 117.
3 Charlotte Observer for May 19, 1974, p. 12B.
4 Thoreau, *op. cit.*, p. 169.
5 Henry David Thoreau, *Walden* (Everyman Books; New York: E. P. Dutton, 1962), p. 183.

6 Yes! The wild pig or hog was deliberately set free to pasture by Scotch-Irish settlers, then hunted in the autumn. The wild boar was imported by George Gorden Moore for a game hunting preserve which failed but left the dangerous boar prevalent in the Tellico Plains area, See Thomas L. Connelly, *Discovering the Appalachians* (Harrisburg, Pa.: Stackpole Books, 1968, pp. 188-9.

7 Henry Hill Collins, Jr. (ed.), *Bent's Life Histories of North American Birds*, Volume Two (New York: Harper, 1960), p. 236.

also produced another mystery for me this year. Unlike last year many hawks were seen this year, although as a beginner I could not identify them. I was particularly puzzled by sightings around Spence Field where we saw several pairs of large hawks flying high in circles. The only identifying marks were dull white running the length of the rear side of the wings and a tail that was either fan-shaped or slightly narrow (perhaps we were seeing several species). Here is the puzzle. These could be turkey vultures except the distinct red head was not seen, at high altitudes (above 3500 feet) they are uncommon from March through October, and at the higher altitudes solitary birds are the rule.[8] The only fact that might suggest turkey vulture, despite the frequency and pairing of the birds we saw, was that we were near Cade's Cove. Since cattle are grazed to approximate the appearance of the valley as it was years ago, the turkey vulture is said to be fairly common.

For awhile I considered that possibly we were seeing golden eagles but their frequency ruled that now rare bird out. Again the modern walker is reminded of how much has been lost.

Still, for one common bird I saw, the chestnut-sided warbler, the advance of civilization has been an apparent boon.[9] The cutting of the primeval forest, and then the increase of neglected fields and pastures with their growth of bushes, has helped increase the number and distribution of this warbler. Audubon only saw the chestnut-sided warbler once, whereas I saw it almost daily. But I think the overall accounts show us in the red.[10]

If the southern section of the trail doesn't have the beauty of the evergreen forests, it does have a beauty of its own in the balds or mountain meadows. To enjoy walking and seeing these natural orchards with their grass, rhododendron shrubs and flowering trees was both a surprise for me and another mystery, for no one knows why these balds exist on these mountains instead of the usual woods and rocks.

One of the trees in the meadows and throughout the trail which I became acquainted with was the shadbush or service (pronounced sarvice) berry tree. Its blossoms highlighted all the views, the counterpart to the dogwoods on the trail last year. The most common shrub seen on the walk this year was again viburnum or Hobblebush or moose-wood (moose!) except that this year the white blossoms were out atop the large round green leaves.

A second new tree also provided a surprise for me. Wandering around Derrick Knob I spotted on the ground a large brown nut which I took to be a horsechestnut, and horsechestnut for the northerner suggests home. It turned out not to be a horsechestnut but its southern cousin the native buckeye. Looking up I saw the familiar large, multi-petaled chestnut leaf. Later I recalled that a part of the trail we had walked that day was called Buckeye Gap.

Surprises, mysteries — it had to come to a necessary end, for most backpackers are creatures of the unnatural cities. The last day of this walk couldn't have ended in a more fairytale excursion. From Spence Field to Cade's Cove is about seven miles of rhododendron thickets, mountain streams and green, moist woods, flowers and birds. The way was covered with petals from the service trees as well as mountain magnolia or umbrella trees. Along the way were wildflowers, the Canada violet suggesting north and the falling blossoms of the Carolina silverbell suggesting south. And all suggesting a predicament.

Most of this forest and its inhabitants has been lost, more has been endangered, yet we would not give up the motels and steaks of Gatlinburg. Part of the solution I think lies in providing wilderness for each city just like the Smoky Mountains National Park serves as wilderness for the Carolinas and the nation. This would ease pressure on the few national parks and ease pressure in the inhabitants of the cities. A recent editorial suggested that we who live in Charlotte brag "we are near the mountains and near the beaches," but they are hundreds of miles away and not available on the daily basis Thoreau suggested. "It is as if the best thing about Charlotte (and all cities?) is the ease with which one can escape it."[11] Back to walking daily at home as best as possible, and arguing for more places to walk in. ▲▼

11 Charlotte Observer for May 11, 1974.

What is in the future for areas such as the Appalachian Trail? Perhaps their greatest enemy now is simple overuse. Additional areas must be secured to lessen the pressures of man.

PHOTO BY JOEL ARRINGTON

8 Arthur Stupka, *Notes on the Birds of Great Smoky Mountains National Park*, (The University of Tennessee Press, 1963), p. 31.

9 Collins, *op. cit.*, p. 276.

10 What happened to the numerous parakeets, wild turkeys, turtle doves, nightingales, cranes, storks, trumpeter swans and pelicans that John Brickell wrote of in his 1731 *Natural History of North Carolina* (New York: Johnson Reprint Corporation, 1969)?

Will the Chestnut Ever Return?

by Jim Dean

PHOTO BY LUTHER PARTIN

"CHestnuts roasting on an open fire . . . ," sings Nat King Cole. It's a wonderful song, but it always causes a pang of regret. You see, I've never actually seen a chestnut roasting on an open fire, and I think I've missed a part of my heritage.

Almost everybody knows what happened to the American chestnut tree. Back about the turn of the century, a strain of chestnut blight was accidentally introduced from the Orient, and it spread from New York throughtout the Appalachians until it had killed every mature chestnut tree.

But many people have forgotten—or were born too late to ever know—what the American chestnut was really like. Few people realize just how important this tree was.

The American chestnut was the most numerous single species of hardwood in the Appalachians from New England to Alabama. Chestnuts accounted for anywhere from one third to three fourths of the hardwood trees in the forest.

In other words, there were more chestnuts than oaks or hickories, maples or beeches. The chestnut dominated the forest not only in numbers, but also in size.

It grew taller, reaching heights of 80 to 100 feet, and it was thicker. One chestnut growing in Francis Cove, N. C., had a stump that measured 17 feet across.

The chestnut was considered the most nearly perfect tree. It grew almost anywhere (except on swampy ground) and its lumber was excellent for construction and paper making as well as furniture. Chestnut was practically indestructible and fence posts and rails outlasted the men who placed them. The wood and bark was rich in tannin, making it valuable in making leather from animal hides.

The American chestnut grew rapidly, reaching sawlog sizes in about 50 years. When cut, new sprouts rose out of the stump and reached as high as 10 feet in the first year, thus making it unnecessary to plant seedlings. The trees were never frost-killed because they bloomed in late June or early July and therefore there were always plenty of nuts.

Wild turkeys, deer, bears, squirrels, and other game animals and birds fed heavily upon the many nuts that fell from these trees each year.

At the turn of the century, populations of some game species were quite low. There weren't many deer. The turkey was in trouble. Bears were getting more scarce.

This situation has been largely blamed on the massive logging, forest fires and virtually unrestricted hunting that was going on in the early 1900s, but it seems more than just a coincidence that this was also when the mighty chestnut bit the dust. In fact, the loss of the major contributer to the annual mast crop seems more likely to have caused major problems for wildlife populations than anything else.

Of course, as most know, the restoration of game populations since the turn of the century has been relatively successful through habitat management and enforced hunting regulations. Deer populations are much higher now than at any other time in this century. The turkey is a hopeful candidate for restoration in western North Carolina and early efforts to restock turkeys seem to be paying off. Squirrels seem to be in good shape, but the bear—having lost most of its original mature forest habitat—is still in trouble.

Wouldn't it be nice if the American chestnut could also be returned to its former glory? Surely the return of the chestnut would be beneficial to our present wildlife populations.

So what are the chances? Some blight resistant Oriental chestnuts are being studied (and that's where we still get roasted chestnuts from in some of the large northern cities). But this is not considered the best solution.

The best hope is that a strain of blight-resistant American chestnut can be developed, and scientists are working on it. Already, there is some evidence that the many surviving sprouts of American chestnuts are becoming more blight resistant. The sprouts live longer before the blight gets them, and some have reached four inches in diameter.

Also, there is the hope that a blight-resistant mature chestnut will someday be found somewhere in the vast Appalachians. When, and if, it is ever found, the nuts from such a "grandfather" tree could help restore the chestnut to its former range and glory.

You may be able to help. If you know the whereabouts of a large, living American chestnut, contact the Division of Education of the N. C. Wildlife Resources Commission, 325 N. Salisbury Street, Raleigh, North Carolina 27611. Also any fairly sizeable tree (four-six inches in diameter) with some apparent degree of immunity to blight would be of interest.

We'll pass the information along to the proper scientists, and maybe someday our children and our wildlife populations will again enjoy the benefits of this magnificent tree. ⬍⬍

PHOTO BY JIM ROBINSON

River Herring, Vanishing Resource

by Harold Tyus
U. S. Fish & Wildlife Service

RIVER herring is a group composed collectively of two species of herring-like fishes, the alewife, *Alosa pseudoharengus* and the blueback herring, *Alosa aestivalis*. These fishes are anadromous, that is, the adults return to freshwater to spawn and the young migrate to the ocean where they grow to adulthood. The increasing alteration of coastal streams in North Carolina has created alarm among conservationists because artificially induced changes of channelization and drainage are adversely affecting these ecological links between freshwater streams, estuaries and the ocean. Only in a few locations in North Carolina do sportsmen still utilize these fishes although they are taken in great numbers commercially.

Importance

William Bradford recorded the the use of river herrings to the Pilgrims for food and fertilization of crops and these fishes were an important resource before the coming of the white man (Hay, 1959). In North Carolina, the herring catch was formerly the largest in the U. S. (Smith, 1908) but since that time the harvest has been steadily dwindling (Woodward, 1956). It is common knowledge that the river herrings are not found in many streams, and are reduced in others where once they were abundant.

This decline in our herrings also affects larger freshwater and marine fishes. It was noted as early as the 1920's (Belding, 1921) that in more populated northern states where herring runs were destroyed that there was a simultaneous decline of shore fishes. This decline was no doubt due to the fact that river herrings are generally restricted to a maximum of 80 miles from land (Mansueti and Hardy, 1961) and therefore are always available for forage by marine predators. Also, bass, perch, pickerel and other freshwater fishes feed on eggs and young herrings, while estuarine striped bass are recorded as taking adult fish.

The value of our anadromous herrings has previously been grossly underestimated because short-term economic gains do not indicate their ecological value. These fish migrate into freshwater streams in the spring when conditions allow a rapid, almost instantaneous surge of food (plankton, small invertebrates) created by spring floods and runoff of nutrients. Their presence enables an immediate corresponding utilization of this food which otherwise would not occur. The resident stream animals cannot support this high standing crop of fishes on a year round basis, and the resident population is low in the spring

because it has just survived the winter. Migrating herring bring stored eggs from the ocean with them. These eggs provide food for stream fishes and those eggs that survive and hatch are able to experience rapid growth, transmitting stored energy to the open ocean upon the seaward summer migration. The adult fish are available in the shallow spawning grounds for larger predators and man, who uses the fish for food, bait, and fertilizer.

Cause for Decline

Although offshore commercial fisheries have increased since the mid-1960's, the decline of the river herrings predate this date and appears to be correlated closely with coastal development. The new offshore fishing pressure may be the decisive factor in the end, but it is certainly not the historical cause.

Intensive studies in the 1910's (Belding, 1921) indicated that dams and other barriers were major factors in the complete loss of herring runs. This knowledge was confirmed later (Rounsefell and Stringer, 1944) and it was found that in no instance had river herrings naturally reestablished in a stream whose run had been destroyed. This homing tendency is illustrated in North Carolina by my findings at Lake Mattamuskeet: approximately 97 percent of the migrating fish run up only one of the apparently equal routes to the lake spawning grounds (Tyus, 1947).

But even if access to spawning grounds is maintained, drainage can result in loss of a fishery. Low water levels in the access route can cause elevated temperatures, low dissolved oxygen, and even current reversal during the return runs (May in North Carolina) of adults and juveniles. Worse than that, drainage usually completely destroys the spawning areas or reduces it in size so that the run is endangered.

Stream channelization either promotes faster runoff or induces drainage of surface waters. This is the primary factor which I believe destroys herring runs in North Carolina, although some physical effects of blocking off spawning areas with spoil banks can also occur. It should be emphasized that river herring (also hickory shad) are not mainstream spawners and require backwater ponds, small tributary streams, and low, flooded areas available only during spring flood stages.

River herring are well adapted to turbidity in access routes. I do not believe this is true of spawning and nursery areas. Increases in suspended and deposited sediments can produce marked changes. My observations of channelized and non-channelized streams in North Carolina find that most streams are channeled in upstream swamps and the sediment transported downstream changes unchanneled lower portions as bad, or worse than drained portions. Some changes I noted in these streams resulted from creation of sediment wedges, isolated anaerobic lagoons, and the smothering of vegetation under inches to feet of silt and mud. The impact of such changes includes losses of large areas of spawning habitat, decreases of planktonic food for young fish, and a loss of attachment vegetation for the adhesive eggs. Prime spawning areas are lost first from sedimentation, since the ponded areas induce faster settling rates.

Conclusions

With increasing coastal development in North Carolina, the outlook for our anadromous herrings is grim. This precious resource has been largely undermined by greedy developers who have eradicated these fishes in many northern areas. Until now we have not paid the true value for drainage and maintenance of such developed land because oil has been essentially free for the cost of retrieval and refining. As oil becomes more expensive we will be forced to abandon false economy inherent in many drainage programs. When this time arrives, I hope North Carolinians will have conserved valuable wetland resources and can relearn how to use the "free" food provided by nature. Then the farmer with a herring run in his stream will once again be considered a wealthly man indeed!

LITERATURE CITED

Belding, D. L. 1921. A report upon the alewife fisheries of Massachusetts. Mass. Dept. Nat. Resours., Div. Mar. Fish. Contrib. No. 11. 135 pp.

Hay, John 1959. The Run. Doubleday, Garden City, N.Y. 189 pp.

Mansueti, A. J. and J. D. Hardy, Jr., 1961. Development of fishes of the Chesapeake Bay Region. Vol. I, Port City Press, Baltimore, 199 pp.

Rounsefell, G. A., and L. D. Stringer 1944. Restoration and management of the New England alewife fisheries with special reference to Maine. Trans. Amer. Fish. Soc. 73:394-424.

Smith, H. M. 1907. The Fishes of North Carolina, Vol. II, N. C. Geol. and Econ. Surv. Raleigh. 453 pp.

Tyus, H. M. 1974. Movements and spawning of anadromous alewives, *Alosa pseudoharengus* (Wilson) at Lake Mattamuskeet, North Carolina. Trans. Amer. Fish. Soc. 103(2):392-396.

Woodward, G. M. 1956. Commercial fisheries of North Carolina. An economic analysis. Bur. Bus. Serv. and Res. Univ. of N. C. Press, Chapel Hill. 153 pp.

Herring, shown here being processed at a Colerain fish plant, can be destroyed or seriously curtailed by the destruction of their spawning areas, small tributary streams and flooded lowlands. The outlook is grim.

DOWN EAST WINTER STRIPERS

FISHING

Editor's Note: Beginning this month, a regular fishing column written by Jim Dean will appear in "WILDLIFE IN NORTH CAROLINA."

FLYING east along Rt. 64 toward Manteo, you cross the Little Alligator River and then the wide mouth of the Big Alligator. To your left is Albemarle Sound. Ahead, Durant's Island guards two large bays known as East and South lakes. Beyond this lies Manns Harbor on the edge of Croatan Sound.

From the air, water seems to stretch to the horizon in nearly every direction. In March and April, a lot of this water contains striped bass (locally called rockfish), and the fishing can be quite good.

Manns Harbor is the center of this fine sport fishery. Charter boats are available to take you out into Croatan Sound or along the shadow of Umstead Bridge to troll for rockfish that average three pounds or less, but which sometimes reach over 20 pounds.

The venturesome spirit is by no means tied to the charter boat fleet. With a seaworthy boat in the 16-18 foot class, it is no problem to catch stripers during the spring in Croatan or Albemarle sounds.

A couple of years ago, Joel Arrington and I spent the better part of a week in late February fishing out of Manns Harbor. Mostly, we trolled along the side of Umstead Bridge, or anchored and fired bucktails towards the pilings. We also launched a boat in East Lake and found stripers off the points. The East Lake fish took diving minnow imitations. We took stripers up to seven pounds, but saw other anglers with fish in the 12-pound class. Most were much smaller.

In the Manns Harbor area, the spring fishing gets underway in March as a rule and lasts into May. Both Croatan and Albemarle sounds are good producers. The striper fishing slacks off in late spring and remains at a low ebb through the summer until October when it picks up again. Good fall fishing usually lasts until about Christmas.

Joel and I — along with others — have also found that even during the winter, you can find stripers in decent concentrations in East and South lakes during warm spells. Some biologists believe they like to stay in deeper holes in the sounds, bays and river mouths during mid-winter.

There are several places to launch boats in the area. There is a commercial ramp at Manns Harbor within sight of Umstead Bridge. The N. C. Wildlife Resources Commission has a free ramp on East Lake between Manns Harbor and Mashoes. Roberson's Landing off Rt. 64 gives access to South Lake and to the east side of the Alligator. Morris Pritchett operates a store and landing on the west bank of the Big Alligator.

You'll probably find that standard bass casting or spinning tackle will work fine. I used a casting rod with 17-pound test line, alternating it with a seven-foot spinning rod and reel filled with 10-pound test.

Bucktail jigs are commonly used for trolling. You may also find the new "soft-bodied jigs" effective. A year or so ago, a jig called the Hairy Worm was a favorite. Short metal squid (such as the Hopkin's Shorty or Stingsilda) are good for jigging around bridge pilings or in deep holes. You can also cast these lures when feeding birds lead you to schools of stripers.

If you plan to fish East or South lakes, take along some diving minnow imitation plugs such as the Rebel or Redfin.

There are motels and restaurants in the Manns Harbor and Manteo area, but there isn't much west of Manns Harbor until you get to Columbia.

This Croatan, Albemarle population of stripers remains a puzzle to most anglers and biologists. Most experts now generally agree that these fish rarely, if ever, go out into the ocean. Federal tagging studies tend to support this theory. Very few stripers tagged in Albemarle or Croatan sound have ever been caught anywhere else except in the sound or up the coastal rivers during the spawning season in the spring.

• **continued on page 27**

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Public Hearings on Hunting and Trapping Regulations for 1975-76

Listed below are the dates and locations of the public hearings for the discussion of next season's hunting and trapping regulations. Each meeting is scheduled for 7:30 p.m. Your participation is urged in these meetings.

Date	Location
April 7	Courthouse in Edenton
April 8	Courthouse in Jacksonville
April 9	Courthouse in Tarboro
April 10	Courthouse in Elizabethtown
April 11	Courthouse in Graham
April 14	Jackson Co. Community Service Center in Sylva
April 15	Western Piedmont Community College in Morganton
April 16	Courthouse in Yadkinville
April 17	Central Elementary School in Albemarle

National Wildlife Week Materials

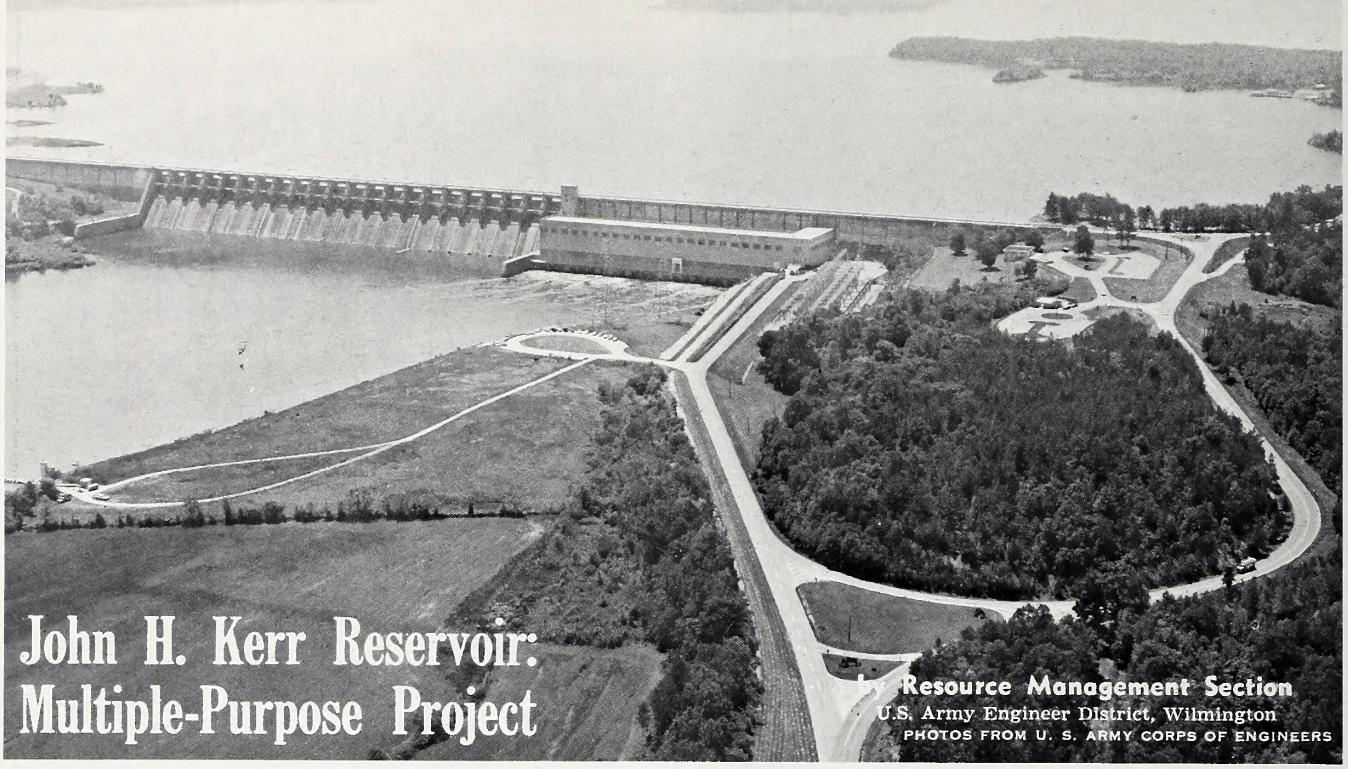
"We Care About Wildlife Habitat" is the theme for the 38th annual National Wildlife Week, March 16-22 (see back cover). A limited number of Wildlife Week kits are available from State Chairman George Batts, RFD. 3, Box 127, Fuquay Varina, N. C. 27526. Actor Lorne Greene is serving as National Chairman of this observance.

Too Late?

The Durham Power Squadron is beginning a 12-session, Small Boating Course, 7:30 p.m. March 6 at the National Guard Armory. Try to make it.

Quail Covers Ready

Remember the January, 1975 cover on WILDLIFE IN NORTH CAROLINA? Well, it apparently was quite a popular one, so the Wildlife Commission had a limited quantity printed on a quality paper without any printing over the painting. This wildlife print has a border suitable for framing and is available at a cost of $3.00 each to cover handling and postage. But the quantity is limited.



John H. Kerr Reservoir: Multiple-Purpose Project

by Resource Management Section
U.S. Army Engineer District, Wilmington

PHOTOS FROM U. S. ARMY CORPS OF ENGINEERS

THE term "multiple-purpose project" could well have been coined to describe John H. Kerr Reservoir. This Corps of Engineers project was authorized by Congress in 1944 to provide flood control and hydroelectric power. It was realized at the time of authorization that the facility would likely have other assets. It is doubtful, however, that the early planners could have foreseen the many benefits that are now being realized by the American public from this project.

Construction of Kerr Reservoir was initiated in 1946 and essentially completed in 1953. As it enters its 22d year, the project is demonstrating more than ever its true worth. The current realization of numerous resource shortages emphasizes the true value of land, water, and forest resources. The many benefits of this facility will undoubtedly become more valuable in the years ahead.

Flood Control

John H. Kerr Reservoir was designed to prevent or lessen damages from flooding in the lower basin of the Roanoke River. Since its completion, Kerr Dam has prevented an estimated $17,769,000 in flood damages. The most recent dramatic demonstration of this capacity occurred during the aftermath of Hurricane Agnes in July 1972. During that storm alone, Kerr Dam prevented an estimated $12,000,000 in damages to downstream interests.

Hydroelectric Power Production

The second authorized function of Kerr Reservoir is the production of hydroelectric power. Each year an average of 438,000,000 kilowatt hours of electricity is produced in the powerhouse at Kerr. This is enough electricity to provide all the electrical needs for seven cities the size of Rocky Mount. The current energy problem and the intensified concern for the environment emphasizes the true worth of facilities like John H. Kerr Reservoir which produce electrical power without creating pollution problems.

Recreation

Although recreation was not mentioned by Congress in authorizing Kerr Reservoir, it is becoming increasingly important. In 1973 approximately 3,196,000 visits were made to this project by persons seeking some form of recreation. In order to meet this recreation need, the Corps of Engineers operates 12 public recreation areas. In addition, 10,900 acres of land are outgranted to other agencies and organizations for recreational purposes.

The State of North Carolina has over 6,000 acres under lease by the Kerr Reservoir Development Commission. That agency provides recreation facilities at 10 public recreation areas on the North Carolina side of the reservoir. Approximately 2,700 acres are leased to the Commonwealth of Virginia for the operation of Occoneechee State Park. The remaining areas leased for recreational purposes are operated by local governments, scout groups, church groups concessionaires, etc. These agencies and organizations have different operating goals and this variety results in a well rounded outdoor recreation program at Kerr Reservoir.

Forestry

Another side benefit of Kerr Reservoir is the flow of "products" from over 50,000 acres of forest land around the reservoir. These forest lands are being managed to produce wildlife, recreation, timber, and aesthetic values. These are compatible and can be managed to reach their full potential by professional foresters. The foresters at Kerr Reservoir are striving to develop and maintain the forests to meet the needs and desires of the public.

The American people are becoming increasingly aware of the need to properly manage our forest resources. They have come to look on these resources as a stabilizing factor in this age when so much is heard about environmental deterioration. The Corps of Engineers is striving to manage the forests at all projects including Kerr Reservoir, to yield their full

Striped bass fishing continues to be good, both in the Reservoir and in the tailwaters shown here (above). Diseased trees and those interfering with the growth of healthy trees are removed (below). Income from the sale of such timber is returned to the project for the enhancement of wildlife, recreation and forest resources.

The 50,000 acres of water at John H. Kerr Reservoir provide ideal conditions for all types of boating.

potentials in recreation, wildlife, wood, and aesthetic values.

Fish and Wildlife

Virtually all of the 61,000 acres of fee-owned land at Kerr is open to public hunting. This is one of the largest blocks of public lands open to public hunting in the Virginia-North Carolina piedmont.

The Corps of Engineers employs a wildlife biologist at Kerr Reservoir to plan and direct a viable wildlife management program. The wildlife agencies of the States of North Carolina and Virginia are consulted for their advice and assistance on improving the wildlife resources at this project. These people are also actively engaged in managing the 2,200 acres of project land that are leased to their agencies by the Corps of Engineers. The management of the fisheries resources at Kerr Reservoir is a joint effort by the appropriate State agencies and the Corps of Engineers. The success of this program is reflected in the outstanding catches made in the reservoir. This is particularly true in regard to striped bass. The Virginia state record for this fish was caught in the tailwaters of Kerr Reservoir in 1973. It weighed 35 pounds. The 50,000 acre reservoir at Kerr provides enjoyment for nearly all types of fresh water fishermen. Visitation figures for 1973 indicate that approximately 1,195,400 visitors to Kerr Reservoir engaged in some form of fishing.

Economic Consideration

John H. Kerr Reservoir is one Federal project that is paying its own way. The income from the sale of electrical power at Kerr amounts to over $3,000,000 annually. Eventually all construction costs attributed to power production will be repaid to the U. S. Treasury. Income is also realized from the sale of camping permits and timber. Collections from these two sources are utilized to expand facilities and programs relating to recreation, wildlife and forestry.

In addition to returning funds to the U.S. Treasury, Kerr Reservoir has greatly enhanced the local economy. The annual operations and management budget of this facility amounts to approximately $1,500,000. Most of this money is spent in the local area. The reservoir also supports numerous privately owned retail and service establishments which are operated to accommodate the people attracted to the project.

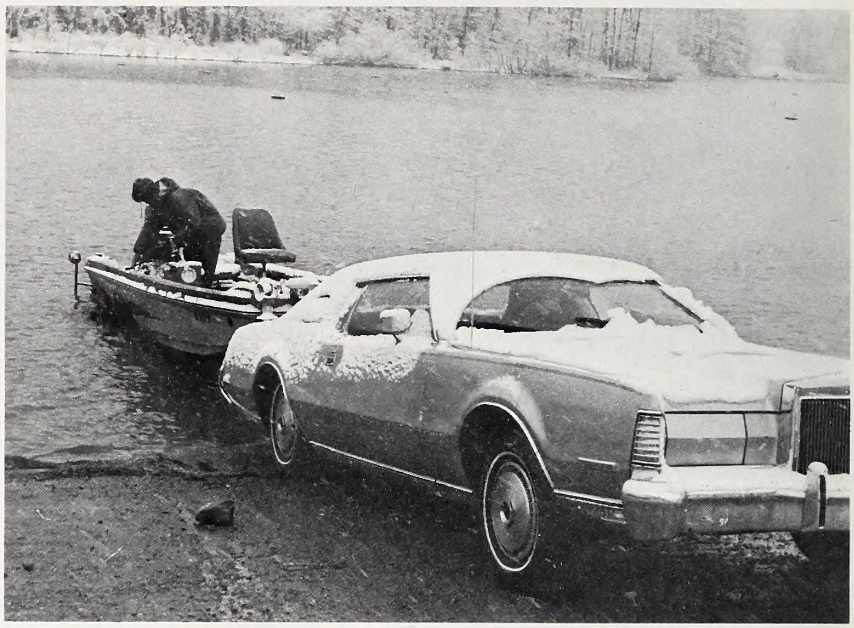
Water Supply

At normal pool level, Kerr Reservoir has a water storage capacity of 1,046,000 acre-feet. This is enough water to cover the six counties surrounding Kerr Reservoir to a depth of 6 inches. This tremendous storage capacity provides a dependable water supply for local municipalities and industries. Without this supply, some municipalities would be severely restricted in their growth potential.

The citizens of Virginia and North Carolina and indeed the whole nation can be justly proud of John H. Kerr Reservoir, a facility that serves so many needs. It is doubtful that any other project within these two states serves as many purposes for so many people. This multiple-purpose reservoir provides flood control, pollution-free electrical power, recreation, forest resources, fish and wildlife benefits, water supply, and in addition is paying its own way. It is a living monument to the people who conceived this project and worked to make it a reality. ◆

Kerr Bass in the Spring

by Bob Gooch
Troy, Virginia
PHOTOS BY THE AUTHOR



Yes, it's every bit as cold as it looks, but that doesn't stop the early season bass angler. Dress warmly and have a sea-worthy boat.

FOR years I have shied away from the big reservoirs — thousands of acres of impounded water, much of it over 100 feet deep. Cranking fish from depths of 25 feet or more is just not my angling cup of tea. It smacks of wire lining for lake trout in the deep northern lakes, a type of angling I never enjoyed even though it can produce tasty lake trout.

This was my picture of reservoir fishing — until I fished big John H. Kerr Reservoir on the North Carolina-Virginia border with Blake Honeycutt one cold week in March.

Though it was early spring, winter was having its final fling as we launched Blake's big bass boat for two days of fishing. A couple of inches of wet snow covered the shore. I didn't feel our chances of catching bass were worth a deflated nickel.

We tried the Virginia side first, tossing plugs and spinner-baits to the storm-tossed Occoneechee State Park shoreline. Almost immediately Blake was catching bass. They were not little fish either. Most were three pounds and up.

The weather was more favorable for the second day of our March fishing trip, and we found the bass just as cooperative in the broad Grassy Creek arm of the lake. These bass were also lunker size, and Blake capped our trip with a fine eight-pounder.

Sure it was cold on the big lake. Snow stung our faces and the wind whipped the murky water into an uncomfortable chop — but we caught bass. Best of all it fitted my fancy of bass fishing. All of the fish were taken from water only five to ten feet deep. There was no probing the depths with pounds of sinkers and weighted lures.

WHAT was it about this particular trip that made it possible for us to catch these fine bass in the shallows? The answer is simple — the time of the year.

Let's look at the life pattern of the Kerr Lake bass.

December, January and February are the cold months at Kerr. February is often the coldest time of the year. Just about any fisherman can tell you the bass are usually deep then, semi-dormant and sluggish as they wait out the cold weather in their deep winter homes. If the weather moderates for a few days they move temporarily into shallow water, but these periods of activity are too infrequent and unpredictable for consistent angling success.

The same general conditions may hold for early March. Much depends upon whether the ground hog saw his shadow and how far advanced spring is. Blake told me that several weeks prior to our late March trip he caught an unseasonably warm spell and enjoyed several days of fantastic fishing. His catch approached 100 fish, all of which were released.

It is normally the middle of March before the first signs of spring appear and spring fishing conditions unfold. Now the bass commence to stir in their winter homes and move toward the shallows.

It is spawning time.

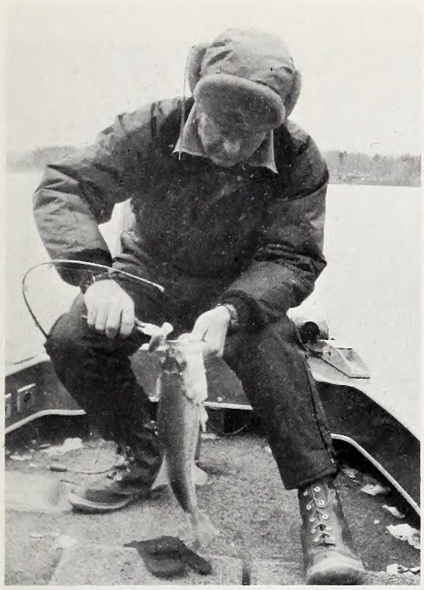
How fast they move and when they spawn depends to a large extent upon how quickly winter relinquishes its grip. As the water temperatures approach 60 degrees the fish spread out and start fanning their spawning beds.

A thermometer is handy for spring fishing.

Wind can be a problem in March. It is cold and uncomfortable and bounces the boat around, making it hard to control. But there are enough shallow, well-protected coves and high banks at Kerr to provide the angler with plenty of productive water. That was one of the reasons Blake and I were fishing the northern shore of the lake that stormy morning in March. The high banks and heavily wooded hills of the state park gave us good protection from the northeast wind.

Veteran Kerr Reservoir anglers like the bends in the creeks, the rocky points and the stump dotted areas for their March fishing. Jigs and eels are popular and on warm days floating-diving lures are good.

It is well to keep in mind that spring bass like a fast moving lure. The reason is simple. The fish, hungry from the long winter, are prowling for food as well as searching for suitable spawning areas. Food is extremely limited in March. Frogs are not yet



Dressed for the chilly winds of March, the author (left) unhooks a nice largemouth that fell for a deep-running plug. Catches like this (above) are almost routine when you can find the fish in the spring.

active and there are few insects. The big bass feed mostly on minnows and yearling bluegills. These little fish move rapidly, particularly if they are alone — away from a school. The fast moving lure, alone in the big water, resembles a scared minnow scurrying for cover, and this is what spring bass are looking for. Try to imitate it.

ANOTHER thing to consider on spring fishing trips is the condition of the water. It is usually high and murky — often muddy. Lures that send out vibrations are more effective than those that rely upon their flash or action to catch the bass's eye in the dark water. The twirling blades of the spinner-bait create vibrations. So do plugs with built-in rattlers.

Many anglers like the murky water because it conceals their approach from the bass. Heavy lines and shadows are less conspicuous, but they frequently depend upon the noisy lures to offset the poor visibility.

Though inclined to be fickle, the April weather is more likely to be warm than is that of March. Still, the rising and falling temperatures make it hard to locate the fish, and the wind can be a problem. A cold front may send the fish deep again, but not always.

This is the month to work the rocky points and banks. Those with brush on them are usually best. Buzzing a spinner-bait near the surface is popular in April, and it can produce some exciting fishing.

When the water rises from spring floods the fish will follow it back into the trees and brush. They are usually feeding when they do so, but locating the fish and landing them in the heavy debris is difficult.

Many anglers fish grape or black jelly worms in April. Six or seven-inch lengths are popular. They should be fished behind a ¼-ounce slip sinker.

What many consider the most exciting bass fishing — topwater or surface fishing — is best in May. In Kerr, however, it usually means fishing in the willows, and you need a heavy line and a sturdy rod to horse the fish out of the thick stuff. The fish are moving off and on the spawning beds in May and that means fast fishing. A buzzing spinner-bait can almost equal surface fishing for excitement. Worms are also good fished shallow in spawning areas.

Spring is waning in June, and so is shallow water bass fishing. The bass are less predictable again — like they were in early March.

Take a look at what happened at Kerr Lake last June. Don Shealy, fishing a national bass tournament, cast worms right against the willows in three to six feet of water and took first place. He had located a concentration of bass in the Nutbush Creek area in March and found they were still there when he returned in June. Another contestant, fishing the points around the willow bushes in the same general area, was almost as successful. But Bill Dance located a good school of bass in twelve to twenty feet of water and fished a drop-off successfully.

The topwater fishing can be good in June also. It is best early and late in the day around the brushy points. Buzzing the willow points with spinner-baits is good in June, and a lot of bass are caught off of the points in eight to ten feet of water.

In addition to having a knowledge of the bass's habits it is important to approach this exciting spring fishing with the proper clothing, equipment and mental attitude.

ADOPTING the right attitude is easy. Expect to be a bit uncomfortable. Modern outdoor clothing can eliminate much of the discomfort of fishing in cold, stormy weather, but your hands will get cold, the wind and rain and snow will sting your face, and a cold wind will eventually get to your bones, but you will suffer no permanent harm. In fact a brisk March wind in combination with the bright sun bouncing off the surface of the lake will give your face a healthy tan, blotting out the pallor of the long winter.

If you are successful you will be handling fish and your hands will get a little wet and cold, but that big fish in the ice chest will more than compensate for the small discomfort.

Insulated underwear under a wool shirt and trou-

• **continued on page 27**

Woodland Miniatures

by Allein Stanley

PHOTOS BY ANN HAWTHORNE

You will have a better understanding of the workings of nature by observing them in this miniature landscape.

MANY of Nature's most exquisite plants may be found in tiny sizes. Perhaps you have stooped to study the delicate tracery of fern moss or inspected the fruiting body of a slime mold. Hopefully, you have viewed the flowers of chick-weed or veronica under a magnifying glass. Have you paused to discover the complex ecosystem of a decayed log? A walk along any woodland path can reveal a multitude of miniature landscapes, all fashioned in perfect balance, as if to suit a Lilliputian planet.

It is possible to capture a portion of this small world in the form of a woodland terrarium. Although relatively simple to make and requiring little upkeep, a terrarium can provide a happy duplication of nature for months within your home.

To create such pleasure, sharpen your eyes, take basket and trowel and set out for a lazy walk through any available woods (with the owner's permission, of course). Search for soft moss carpets, the greenery of tiny ferns, the variegated pipsissewa that springs up under pines. Brush aside leaves for the evergreen partridge berry that bears the scarlet, "Christmas" berries; seek lowlands and creek banks for the protected seedlings of violets, oxalis and young grasses. Consider a stiff branch of club moss or a minute rosette of rattlesnake plantain. Any green plant is suitable as long as its is small enough to fit into the container you choose. Attune your mind to the variety you see and select plants of different hues, shapes and growth habits.

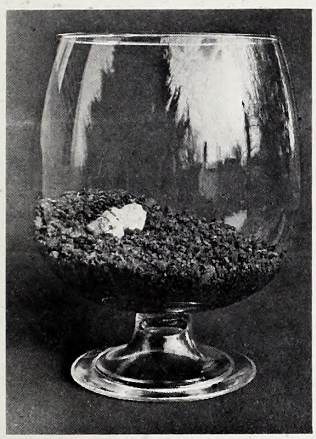
A good conservationist never becomes greedy. Eight or ten little beauties will suffice for even a large terrarium. It is also a poor practice to take up a sheet of moss when you will utilize only a piece of it. To a certain extent, a terrarium is interpretive rather than a literal duplication, so avoid plants that resist transplanting, such as pine seedlings or running cedar. The impression of trees and shrubs in your final landscape can be achieved by using a fern or erect mosses or lichens.

In your selection of plants, **never remove those that are rare or unusual.** Even the relatively common rattlesnake plantain or ebony spleenwort should not be gathered unless these are locally abundant. Do not dig plants from distinctive habitats, such as bogs. These flowers are particular about their requirements for survival and you will be unable to provide for their special needs.

However, you will find that plants so common that they are considered weeds may appear unique within a glass container. The palmately positioned leaves of cinquefoil, with their sharply toothed margins may become quite interesting beside a smooth, young panicum. The bright, yellow-green, heart-shaped leaves of a reduced oxalis may eventually dance when placed in front of a sturdy ranunculus. Along woods' edges, collect such plentiful plants as immature Queen Anne's lace, pussy-toes or baby daisies.

If you plan to make a terrarium of woodland plants, use only the rich, woods earth. Do not attempt to force plants accustomed to an acid soil into a sweet loam or a commercial potting mixture. Those that flourish in clay should not be replanted in porous sand. A consciousness of the total environment should always be kept in mind.

Terrariums may be planted in any type container



"Landscaping" (left) is the first step after selecting your container. Once the "terrain" has been established, planting begins: fern, pipsissewa and partridge berry. A wide plant selection is possible from the ones shown here. Left column, top to bottom: rattlesnake plantain; cinquefoil, young fern, mouse-ear chickweed, moss. Middle: partridge berry (twin flower), ebony sleepwort. Right: club moss, pipsissewa, lichen (British Soldiers), daisy, moss and pixie-cup lichen.

that can be covered. The best choice is one that is made of clear, untinted glass or plastic, so that the view into it is unhampered. A gallon jar, laid on its side, or an apothecary jar are good possibilities. Even an old, leaky aquarium can become a thing of beauty. Candy jars or brandy snifters elevate and show off your garden. Today, there are many containers on the market designed for this purpose.

This small ecosystem utterly demands naturalism. After sifting the soil with your fingers to eliminate old wood and roots which might encourage fungi, build a landscape with hills and valleys. You may wish to experiment with a cliff shaped by a pretty rock, where moss can trail, or a steep little mountain upon which you may later place a tall fern. With the exception of your "high" ground, the soil level should never exceed approximately one-third the height of your container.

When you are satisfied that the earth contours are interesting, lay out your collection of plants. If any of these have too much foliage, dead leaves or limbs, clean them up by pinching off the undesired parts. Always set in your taller, background plants first before moving toward the foreground with very small green things. Long roots, such as those of pipsissewa, may be curved through the soil and lightly covered. Work with the tips of your fingers, gently hiding the tender rootlets.

You will discover that plants are particular about their profiles. Don't be afraid to try different areas and different positions until you are content with a most attractive placement. You may work with your plants with the roots temporarily bare since you will be returning them to a little greenhouse. When you are satisfied, pinch off bits of various mosses and tuck under and around your arrangement but do not cover all of the soil. The earth, too, is beautiful and it will heighten the interest and variety of your greenery. The finishing touch of a colorful pebble, snail's shell or the addition of a pottery insect or animal (in natural colors) may please you.

Moisten you new mini-garden by letting water drip from your fingers on to each plant. This process also tamps the soil around the roots. Wipe the glass clean of the dirt which has accumulated during planting with a dampened cloth, and then cover. Within a very short time, your terrarium should freshen into sparkling perfection.

Such miniature woodlands may endure for months or years with a minimum of care. Although they need light, terrariums should not be placed in direct sunlight, for it encourages too much growth. The closed container enables the plants to balance their oxygen and carbon dioxide requirements and recycles the moisture.

Watering should be necessary only once every few weeks or months, depending on the size of the container and the tightness of the lid. A gentle sprinkling is quite sufficient but if too much moisture condenses within or molds begin to appear, removal of the cover for a day should evaporate the excess. If watering is controlled carefully, an undergirding of distracting drainage stones or sand is unnecessary.

Once you have created this capsule of nature, you may find yourself mentally escaping into your little forest. You may also find yourself being captured by the spirits of gnarled old trees and stones, timid creeks and fernbanks. A woodland stroll, in any season, may become a renewed pleasure as your eyes find fresh loveliness in lichens and liverworts, the leaf shape of a seedling or the gift of a miniature blossom. Never again can you pass, oblivious, to the small wonders of the earth.

Doves in Our Pine Tree

by Dwight L. Peterson
Clinton
PHOTOS BY THE AUTHOR

The flowers appear on the earth; the time of the singing of birds is come, and the voice of the turtle is heard in our land; Song of Solomon 2:12

WHEN you think of an energetic family of five and the hustle and bustle associated with it, it's hard to imagine loneliness. But there was an air of loneliness the few days following the departure of the mourning doves in a pine tree in our backyard. Nobody spoke of missing the doves, but the somber glances cast at the empty nest spoke louder than words.

It was about mid-April, 1974, when my family and I noticed two mourning doves *(Zenaidura macroura),* a male and female paired for nesting, giving special attention to the pine trees at the edge of our yard. One tree still protected a last year's mockingbird nest expertly constructed atop some branches and flush against the tree trunk. It was about 12 feet up from ground level and seemed to be the center of interest for the doves. We watched; hoped; tried not to be conspicuous; and continued our daily activity as if nothing was happening. Finally the doves decided the ready-made home was what they were seeking and settled down to the serious matter of family life.

Now, when I think back, I have reached the conclusion that there were at least two main reasons, or factors, involved with the doves choosing this nest. The first factor was that the doves sensed we would cause them no harm, and could actually offer a certain amount of protection. The second factor is a blow against the doves engineering abilities. As you may know, the end results of a dove building a nest is almost shameful. Although the dove holds high honors in many categories, nest building can only receive recognition for shabbiness. The dove uses many materials for nest building but the most frequent seen is a few sticks, straws, and twigs thrown together. When the nest is complete it resembles a platform rather than a nest. The sticks and straws are crisscrossed and the usual depression formed to cradle the eggs is practically absent. It is easy to see why the dove often chooses an old nest built by a more talented bird, like that of the mockingbird in our pine tree.

Saturday, April 20, I noticed that both doves left the vicinity of the nest about 10:30 in the morning. Since both parent birds take turns incubating the eggs (and rearing the young), I wondered if the egg laying had been completed. It seemed unusual that both birds would be gone at the same time and leave the eggs unattended. There was only one way to find out, so I climbed the tree and had a look. When I reached the nest I found two white eggs about one inch in length. This is the usual number for mourning (also called turtle or Carolina) doves. After photographing the eggs, I came down the tree knowing that the next thing in order would be a blind for observation. Both birds being absent from the nest still bothered me, and I hoped they had not deserted the nest for good.

The blind I made was simple but effective. Using an eight-foot step ladder, I wired four upright posts, about three feet in length, on each side of the top plate to support a snap-together type pup tent. By draping the tent over the upright posts, I could sit fairly comfortable on the top plate and p o k e my camera lens through the opening in the center where the tent snapped together. As a safety precaution I drove stakes into the ground at the base of the ladder and secured the legs with wire.

During those moments when the doves were away, the blind was erected and positioned about 15 feet from the nest. It was soon a relief to learn that the doves had not deserted the nest but would return within about 30 to 45 minutes. But knowing the eggs must be maintained at a certain temperature during the process of incubation still remained a mystery. Maybe I was just ignorant to certain facts, but it seemed that 30 to 45 minutes was ample time for the eggs to cool.

The first few days, when I first began using the blind, it was comical to watch the dove become alert when I approached. The neck was stretched long and thin, the body tense and triggered for instant flight. Then, it would settle down when I disappeared beneath the tent cover. If I were a mind reader I would chance the prediction that the dove thought I had vanished into another world and no longer posed a threat. After a few days this tense attitude relaxed and the dove showed little concern for anyone going in or out of the blind.

My spare time, over a period of the next several days, was spent observing the nesting activity so closely I thought I had the blinks of the dove's eye timed at six seconds between blinks. My bottom end would numb from sitting on the narrow top plate of the ladder, but interest in the doves overshadowed the discomforts. You should know what I mean if you've suffered discomforts while afield in quest of game. Maybe like waiting at dawn for duck to come in and you're sure an icicle is dangling from your nose. But no matter; you watch; you wait; and with anticipation. I might add, if you're a sportsman like myself, that if you have not yet added a camera, binoculars and notebook to your equipment . . . you're missing out. Hunters must have skill and knowledge, and by adding this equipment

Sparrows nesting above the dove nest littered the cowering dove (left) with bits of nesting material and droppings, but the dove refused to move. Two white eggs, each about an inch long, were laid in the appropriated mockingbird's nest used last year by its builder.

One of the parent doves incubates the eggs (above left) and protects them from wind and rain. These hatchlings are a few days old (above) and will develop rapidly, fed on the rich "pigeon milk" from the parents' crops. The young birds have developed most of their flight feathers (left) and will soon be leaving the nest to face the world. Their parents may raise one or even two more broods before fall.

you can observe and study. This adds greater ingredients of understanding and appreciation.

Observing the doves from the blind created an atmosphere of normalcy. They went about their daily tasks with complete ease. It's hard to imagine, or believe, what goes on in the daily life of our wild creatures without you actually see it. Many of the episodes that take place, like those with the doves, will leave you fascinated almost beyond belief.

I had observed the doves for about three days, at different times, when I finally satisfied myself with the reason why they left the nest unattended. The reason could be called a theory, but the proof was enough to satisfy me. About 10:30 each morning, the sun rays reached through the openings between the tree limbs and flooded the nest with warm sunlight. Then, and only then, did the dove leave the nest. And just before the nest was again shaded, the dove was back. How the dove knew this timing was beyond me, but I do think we overlook certain credits of knowledge that should be given to many wildlife species.

Having always heard the dove to be loving and affectionate seemed an appropriate description when I found proof in their actions. Of course only one dove attended the nest at one time but the other was always very close in a nearby tree cooing affectionately, and watchful. Many times, when the time of sunlight came on the eggs, the dove away from the nest would fly down and invite the other out to lunch. They would fly away together to a grain field across the highway from our yard. After a lunch of grain and weed seeds, they took a drink from a puddle left by rain at the highway's edge. It was interesting to watch them drink because they did not take water and tilt their heads back like most birds. They sucked the water much like a horse drinking.

On the fifth day of observation I felt sure calamity had struck. Sparrows began building a nest about three feet above and directly over the dove nest. If you have watched sparrows at nesting time, you know their labor is a never ending process of material toting. And feathers seem to be a necessity and favorite.

At the beginning, the sparrows scolded the dove attending the nest in hopes to drive it away. When this failed, they purposely littered the dove and nest below with twigs, straw, string and feathers. The dove would cower down in the nest and calmly take the onslaught. When the sparrows learned the dove was not going to give up its home, they showered down their droppings at every opportunity. There was one day when droppings hit the dove directly on the head and ran down toward the beak. This aggravation continued even after the young doves had hatched from the eggs. Now I was certain I knew why the dove was a symbol of peace.

Thereafter the doves never left the nest unattended.

It was May 1st, 13 days after I first saw the eggs in the nest, when the first hatchling pecked its way from the shell. Little did it know the hardships the parent doves had experienced to bring its life into the world. Harassment from sparrows, heavy rain, and there were a couple of days the temperature went to 37 and 39 degrees in the early morning hours. The next day the second hatchling appeared in the nest.

The hatchlings were ugly little rascals with the nearest resemblance to the parents being the beak. In fact, the large beak was the most noticeable part of their body. They were fed regularly with so-called "pigeon milk" from the crops of the parents. This is a regurgitation of predigested food from the crop of the parent into the crop of the young. It is interesting to observe but you will feel pity for the parent doves. The wide gaping of the mouth, and the hungry, savage attitude of the young doves soon cause the base of the beak of the parent doves to become red and very irritated.

Growth was rapid and each day there was a noticeable change. Although the overall color remained gray, the dark wing spots became more evident. Also the white fringed areas of the tail. I can't be sure of my identification but I will chance the thought that one was a male and the other a female. It is very difficult to tell the male and female apart even in adult doves. Comparing the male and female, the female is smaller (slimmer, especially the neck), has a slightly shorter tail, is duller in color and lacks the metallic purplish sheen about the neck. After observing the nesting activity over a period of several days, I did, finally, reach a point where I could tell the female from the male. But if I were to see doves feeding in a field, I would not bet a spent gun shell I could correctly identify the sex.

As days went by the young doves became more active. They were now eating more solid foods. When they showed signs of hunger the parent dove created an upheaval in its throat, as if to belch, and regurgitated almost solid grains of seed into the nest. The young doves hungrily pecked at it. There was one day I saw one young dove capture an insect crawling around the rim of the nest. It was evident that their leaving the nest was close at hand.

During the early morning hours of May 11th I watched the fledglings move about the nest as if gathering courage for a first flight. The parent doves did not remain at the nest long at a time, but would fly back and forth from the rain puddle near the highway, from the grain field, and from nearby trees. I went back into the house and informed my wife and children of what was happening. Needless to say, our feelings were shadowed with disappointment because we had a trip planned that could not be cancelled. We would return in the afternoon and our only hope was that the doves would not take flight before we returned. Our hopes were in vain. We watched the young doves from the car window as we drove out the driveway. This was the last we saw them.

If the young doves are lucky and escape disease and predators, they'll be with the flocks in the fall and winter. And if I'm lucky I'll be standing in a grain field in the fall and see specks on the horizon sky. The chill of autumn will be in the air and the tree leaves will be turning gold and lavender.

The specks will grow larger and I'll know it's doves when they lower their altitude and begin dropping down toward the grain field. Their normal speed will be about 35 to 40 miles per hour and then I'll realize, with respect, that they can hit 60 miles per hour with a tail wind. With a whistling of wings they'll skim, dodge, and make a few banking turns over the stubbled grain field. Then they'll draw the body back with a pull of the wings. They'll spread the tail feathers in a braking action, and touch down. With each step on their pinkish legs there will be a bob of the head and, although I'll know the doves are migratory, I'll wonder if the doves from our pine tree are in the flock. ▲▼

Stem to Stern

BY ED JENKINS

● Of the 41 lives lost in boating accidents in North Carolina during 1974, 28 of these resulted from capsizings and falls overboard. Two things were common in these accidents. (1) The victims never intended on going into the water, and (2) None were wearing personal flotation devices when the accidents occurred.

The victims in these fatalities quite obviously were not prepared for the accidents. Why weren't these people prepared? What situation did they find themselves in that they had not foreseen?

In most cases the individual did not recognize the danger. The victim who stood up in or moved about carelessly in a small boat probably had done this countless times before without ever losing balance and falling overboard. Everytime he stood in the boat before that fateful day, he was conditioning himself to believe there was no danger.

Too many people on the water have been developing a complacent attitude toward safety. They feel that everything will work out in the end and shrug off close calls or near misses instead of saying to themselves "That was close, I'd better be more careful." Each time one acts dangerously on the water, the chance of an accident occurring increases. If the individual develops a bad habit as part of his standard operating procedure, the result is inevitable.

Boating accidents can be avoided. Virtually all boating accidents could be eliminated if boat operators would do the following three things: (1) recognize the hazard, (2) understand the defense, and (3) act in time.

For example, a boat is on your right or starboard side and is crossing in front of your bow.

Recognize the hazard — You are in a crossing situation and the possibility of a collision exists.

Understand the defense — In a crossing situation the boat on the right has the right-of-way and your boat must give way to him.

Act in time — Take the correct action before a collision is unavoidable.

Being knowledgeable about boating and the water is the best way one can learn to "Recognize the hazard" and "Understand the defense." But where does one acquire this knowledge?

Newspaper articles, boating books and magazines offer much information that is helpful to boaters. The Wildlife Resources Commission provides boating safety booklets and films at no charge for individual and group usage. Courses in boating safety offered by the Wildlife Commission to school groups and to the public by the United States Coast Guard Auxiliary and United States Power Squadrons are perhaps the best way to learn safe boat operation. Then, after the book learning, should come actual experience on the water.

Boating safety information is available by writing:
Division of Motorboats and Water Safety
North Carolina Wildlife Resources Commission
325 North Salisbury Street
Raleigh, North Carolina 27611.

Literature, motion picture films, and other items designed to make boating safer and to aid the boater, are available free of charge by writing to the above address. Your boat registration fees are returned to you in this and other services as well as in the form of public boating access areas.

All in a Day's Work

PHOTOS FROM THE AUTHOR

by Bodie McDowell
Outdoors Editor
Greensboro Daily News
Greensboro

ROY Miller every now and then will put on a white shirt and tie to go to work, but most of the time he can be found in casual wear such as a man would wear fishing.

His attire on any given day could just as well include chest waders, and his office won't be in any cozy room, but aboard a 16-foot boat.

Miller, who lives in Winston-Salem, is a fisheries biologist for the N. C. Wildlife Resources Commission, and most of his efforts for the past couple of years have been directed to Belews Lake near Stokesdale.

His objective is to come up with scientific information that will enable the Commission to provide a good fishery for the many anglers who already have put this Duke Power Company-owned lake high on their list of places to fish.

The lake filled during 1973, and even before that, anglers fished it from the bank for crappies, bream and bass. Some anglers used old roads leading into the lake to put their boats into the water. The lake saw increased use during the summer of 1974 from fishermen, pleasure boaters, sailboaters and water skiers, and most of these came from nearby Greensboro, High Point and Winston-Salem, putting much pressure on this 3,700-plus acre facility.

And it's Miller's job to come up with programs designed to improve the fishery, a responsibility he is not taking lightly. He's concerned with all species, but for the past several months has been concentrating on studying the largemouth bass, the prime target of Tarheel inland anglers.

There have been reports of many bass taken, but for the most part, they have been in under three pound class. However, a few in the five to seven-pound range have been weighed in by anglers.

"I'm a bit disappointed in the growth rate of the bass I have checked here," Miller said. "They just aren't growing nearly so fast as bass on such lakes as Norman, Tillery, Badin and High Rock."

As a biologist, Miller wants to know why this is so, and he'll continue to study the bass.

His theory at this time is that there is a lack of an adequate food supply at Belews Lake. Some 4,000 blue-backed herring were stocked as a forage fish, and while this is in the experimental stage, Miller is hoping it will become the chief food for the largemouth bass.

Other herring probably will be added from time to time, and there also is a possibility the threadfin shad will be stocked as a forage fish. Herring placed in

the lake were taken from the Chowan River in eastern North Carolina, and ranged in size up to 11 inches. Hopefully, the offspring of these will provide the food the bass population needs.

Biologists also stocked game fish in Belews Lake. Fifty thousand bass fingerlings were stocked in the summer of 1971, and 250 adult bass were added later. Most were in the one- to two-pound class.

Other stockings about that time included 40 adult striped bass, 2,000 channel catfish, and in early 1974, the Commission secured walleyes from a northern state in exchange for stripers to place in the lake.

The Duke plant will return warm water to the lake, and this could be a plus factor when and if threadfin shad are stocked. The shad in most lakes die out during winter months, but many would survive here due to the warming water being discharged into the lake.

Temperatures in December ranged from 52 degrees to 65 degrees on the surface, with the warmer water being within a few hundred yards of the discharge canal.

In addition to watching water temperatures, Miller keeps tabs on such things as oxygen content and chemical makeup of the lake, and these tests are run monthly in order to give him comparisons at various times of the year.

Miller and Frank McBride, a wildlife technician who also lives in Winston-Salem, also gain valuable information by using nets and electrical shocking equipment to take fish. These methods were used to get the information on the growth rate of the largemouth bass.

In addition to the lack of an adequate food supply, Miller also is concerned about the "cleanliness" of the lake, saying it could be lacking in nutrients that other lakes have because it is fed by only three small creeks. Bigger lakes on the Yadkin and Catawba watersheds are fed by more and bigger creeks and rivers, plus smaller creeks.

Miller at this point still is compiling information and filing it for study later. It will indeed be interesting to see if there are changes now that the warm water discharge is flowing into the lake. This will be of particular interest to the bass anglers who enjoy fishing during the winter months.

Winter temperatures on the surface will vary from year to year, depending on the severity, but January temperatures should range around 45 degrees and drop about four degrees in February, with the exception of the "hot hole" area. Temperatures usually are the same from top to bottom in late winter.

Summer surface temperatures run to about 85 degrees, but Miller has found 45 degree water at depths of 25 to 35 feet.

Miller has determined that oxygen content is higher in winter months than summer, and this is important to the bass fishermen. While it measures up to nine parts per million in winter, it drops to almost zero in some sections during summer.

He is very interested also in the walleye experiment, and while he thinks the water temperature will be suitable for this fish generally regarded as a northern species, he is concerned about the oxygen content in summer.

If successful, Belews Lake would be the only Piedmont area lake having such a fishery. The walleye is found in several lakes in the mountain section of the state.

Anglers will be watching with interest as Miller goes about his duties on this lake, and they're wishing him the best of luck as he attempts to improve the fishery for all species.

They don't even mind that he doesn't wear a white shirt and a tie to his office. ◆

Roy Miller and Frank McBride employ various fish sampling techniques on Belews Lake including the setting of nets (opposite page) and electro fishing gear (below). Miller lowers an electronically operated thermometer as McBride prepares to record water temperatures at various lake depths.

Objective: Healthier Deer

by Tom Monschein
District Game Biologist

● During the past decade deer populations in the Southeastern states have increased in range and density to such an extent that the majority of these states now have some areas overpopulated with deer. For a number of years many of these high density populations have been subject to disease, parasitism and malnutrition. With well established deer herds in many areas of our state we are faced with the problem of keeping a proper balance between populations and the food supply.

The objective foremost in deer management is to sustain healthy and harvestable populations of animals without endangering the resource. Managing deer is largely accomplished through the establishment of hunting regulations, habitat restoration and habitat manipulation. Deer hunting regulations are subject to annual discussions between game managers, sportsmen, landowners and extremist groups. Management deliberations and research on deer herds consume a good portion of the game manager's time. Biological findings should constitute the basis for management decisions concerning deer herd harvest needs, but nevertheless, some groups and individuals tend to question management tools and techniques which they do not readily understand.

A new technique with which to evaluate the health status of deer herds has been developed by the Southeastern Cooperative Wildlife Disease Study (SCWDS). The SCWDS is located at the University of Georgia and has the specific purpose of investigating diseases of game animals. The new technique, called the abomasum parasite count (APC), is less time consuming than previous methods used in determining deer herd management needs, and also, tangible evidence can be shown to the public as justification for management decisions.

In the summer of 1973 biologists from all Southeastern states attended training sessions at the University of Georgia to learn the procedures for collecting and analyzing specimens. The technique involves the collection of stomach specimens from hunter-killed deer in each area under study. The stomach of deer consists of four chambers which are called the rumen, reticulum, omasum and abomasum. The contents of the last chamber are used for the parasite analysis.

It is natural for stomach worms to be present in the abomasal chamber in all deer, but the number and kinds of parasites reflects the health status of specific deer herds. The abundance of parasites in the abomasum has been shown to be an accurate indicator of the relative density of deer in specific locations as related to existing habitat conditions. Therefore, parasite analyses can be helpful in identifying overpopulated areas in advance so that management decisions can be initiated to avoid the development of diseased and unhealthy herds.

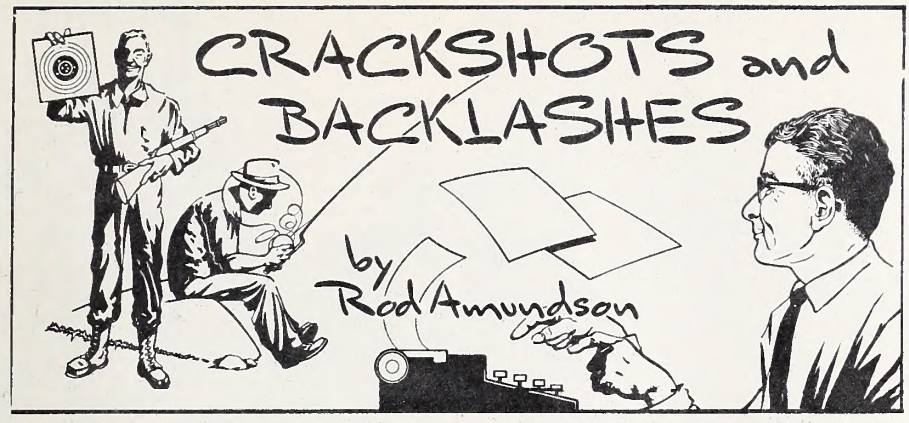
During the 1973-74 deer hunting season in North Carolina this method was utilized to determine the health status of deer herds in 17 different locations. Stomach samples were analyzed by game biologists, and the findings will be useful in formulating appropriate regulations and habitat improvements to meet the needs of deer in each location.

The findings of parasite studies and other research will indicate one of three alternatives we must take. If parasite counts are very low, indicating healthy animals and a low population, then management practices to increase herd size to an optimum level should be implemented. If parasite counts are at a moderate level then the objective will be to maintain the habitat and herd size at the indicated status quo condition. When parasite loads are abnormally high then action should be taken to reduce the herd size and to improve habitat conditions.

If high parasite loads are ignored, then nature will take her own course by reducing the population through starvation, diseases and poor reproductive success. Excess deer should therefore be made available to sportsmen for harvest by allowing either sex hunting. This is the most functional way to maintain healthy deer herds. Harvesting surplus doe deer is not an act of inhumanity, but from now until time immemorial there will be individuals with the belief that it is.

As man alters the world, and makes it more unnatural each day, we must seek faster and more efficient methods to evaluate the health of wild animals so that management efforts can be directed toward maintaining healthy populations for future generations to enjoy. As today's phrase of progress is so often quoted—"we thought you would like to know." ◆

The prevention of wildlife diseases by maintaining balanced populations is the objective of wildlife management. Deer or any other wildlife lost by disease is wasted.



Wildlife Management In Perspective

The role of wildlife management in America is one of today's most frequently debated but least understood environmental issues. In response to the considerable misinformation that surrounds this emotion-tinged subject, the Wildlife Management Institute has come out with a new booklet entitled "Placing American Wildlife Management in Perspective." Easy to read, yet thorough, the 24-page booklet evaluates practice, purpose and value of wildlife management in this country. Designed for the layman, it is must reading for anyone interested in wildlife conservation.

The attractively illustrated booklet devotes several chapters to the key aspects of wildlife habitat, examines the role of hunting in wildlife conservation and takes a close look at the subject of endangered and threatened species. The booklet emphasizes that the management of wildlife is a highly complex business, governed by economics and the impact of human activities on the environment as well as by the biological requirements of the species involved.

Single copies of "Placing American Wildlife Management in Perspective" may be ordered for 50 cents each postpaid from: Wildlife Management Institute, 709 Wire Building, 1000 Vermont Ave, Washington, D. C. 20005. Larger quantities can be supplied with any organization or agency name imprinted on the inside cover at the following prices: 1,000 copies for $656; 5,000 for $1,275; and 10,000 for $2,041. Greater quantities can be furnished at proportionately lower unit cost. ▲▼

What Are They Doing?

Dear Sir:

Frequently we see grackles light on the bird bath with something in their beaks, dip it in the water and fly away. Today I saw one dip a fairly large whitish object, hop to the ground, peck it around a couple of times, fly back to the bird bath, dip it and fly away. Do you have any explanations?

Also, if quail and doves are getting fewer why are people allowed to hunt them? There is still a season on them, isn't there?

If I had some eggs or whatever requirements are needed, I'd love to try to raise some quail. We live in town but next door to a wooded lot and we've had quail and doves practically at our backdoor to feed in winter.

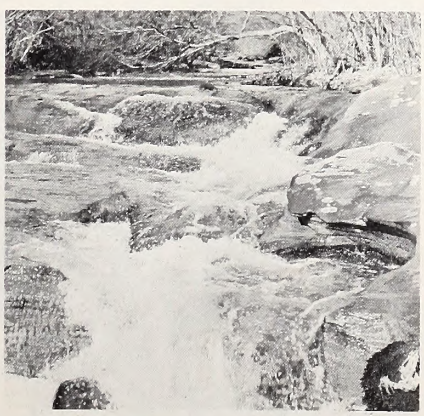
The latest on this, however, is not to put out food in winter. As I've put out literally hundreds of pounds of grain as well as seed cake from recipes given in **Wildlife** Magazine years ago, can't imagine stopping as we have had proof of seeing the same birds several winters. Didn't mean to ramble but this is a subject very dear to me.

Sincerely,
Mrs. C. N. Eckerson
Troy

Trout Habitat Problems

Dear Sir:

The articles on trout fishing in North Carolina in your late summer issue were enlightening, to say the least. Trout fishing in this state is bad enough now without having to worry more about unscrupulous bulldozer operators filling in the streams.



What we need, among other things, are stringent, enforceable stream protection and land-use laws. More streams in the native trout category, strict anti-litter laws, more expensive trout fishing licenses, restriction of more streams to fly fishing only and temporary closing of selected streams to fishing of any kind.

If something is not done and soon, trout fishing in North Carolina will be a thing of the past before we know it.

Sincerely,
Charles H. Ott
Greensboro

Dear Sir:

I have just completed reading the article "Are We Losing Our Trout Streams?" in **Wildlife's** August issue and I had to sit down and write to let you know how much I appreciated it. I live in Jackson County and have seen the land boom that is going on. We are long overdue to try to stop some of the ruins that are taking place in western North Carolina. I am only 24 years old but have been concerned about this problem for sometime. Every chance I get I go fishing or hunting but the places are getting harder to find where no one is constructing some type of house, road, or some other destruction.

In the article it mentioned Caney Fork Creek as being one stream that could be threatened because it is now owned by someone from Florida. This is not the only threat to this stream. Carolina Power and Light Company is considering the construction of two dams in this area. The dams would only affect a few homeowners in the area but that isn't what worries me, it's the stream and land that it would mess up. One dam would be on Frady Creek (which flows into Caney Fork) where there is good speckled trout fishing. It has remained a good stream only because it is so difficult to get to. With a dam here it would all be destroyed.

I have found out that there are almost as many people from Florida owning land in Jackson County as there are local people. Most of the land they buy is mountains, where they eventually build a house or cut roads all through it and sell off for home sites. Just another way

to ruin our country. Most of the local people here are like me, they don't have a large income so when they get an offer to sell their land for a good price, they do so. Only thing is they don't realize what they have is worth more than money.

Thanks for the article. It really tells it like it is. If I can be of any assistance in helping to curb this destruction, please let me know.

Sincerely,
Cecil Dills
Sylva

Ducks on the Pond?

We had a reader inquire about the pros and cons of "pet" ducks on small ponds, and since we really couldn't give her much of an answer, she asked a friend to do some "research." The letter she received, may help others contemplating ducks on a backyard pond.

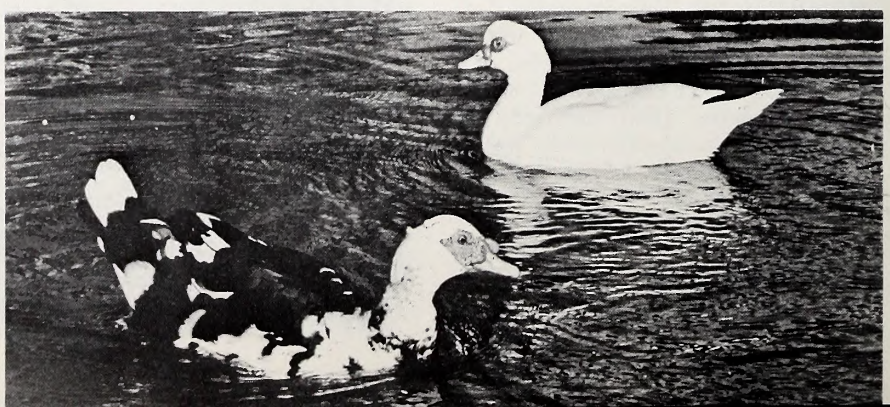
My dear Laura,

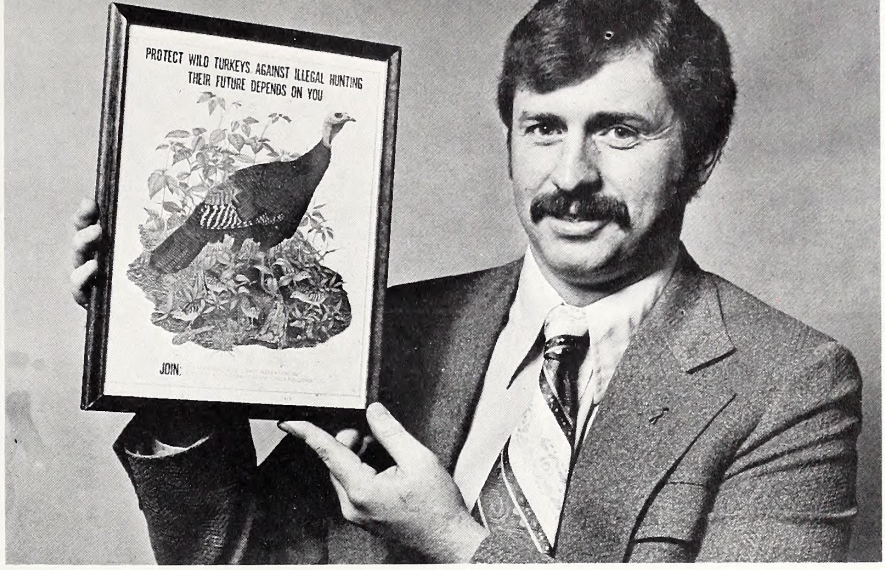
We were delighted to get your letter yesterday. I had been planning to write you because I've been doing some research on duck ponds. It has taken a little time because I had to evaluate the information. What one person likes another hates so I asked several different ones, both those who have ponds and those who **had** them but don't any longer (I thought it would be interesting to find out why they gave them up) and you will have to judge for yourself. One of my first questions was one you were concerned about - - - whether they (the ducks) made much noise in the early morning - - - and I can find no satisfactory answer because everybody down here gets up before the ducks do, I think. As soon as the sun comes up every one is out of bed except in the winter and they are up before the sun then. I have, especially from the women, gotten some very blank looks and a negative shake of the head with that question. These silly city folks, you know. There is one thing they all agree on though. You will have to have a fence around the pond, preferably a wire one because everyone agrees that they are a pleasure to watch and that is the point of having them. Of course, knowing me, I had to find out why and, politely, the men told me to keep them out of the road, and I explained that was no problem then the women told me it was to keep them out of the garden and I immediately thought of your garden and decided that that wasn't much of a problem either and finally Eugene Styron had to be blunt with me and I will put it in nicer terms but the whole point is, you can't walk in the yard without stepping in something which can get rather messy. He says they always pick the front porch or the paths to excuse themselves on. So, looks like a fence is important. Next, they all say you only have to dig a hole (I forget right now how deep, but it wasn't too deep - - - three or four feet) and nature and the rain would take care of keeping it filled up and the birds (ducks) will keep it from getting polluted; in other words, the water won't stagnate. It won't be any problem stocking it because they multiply in captivity and I'm sure with your connections (the folks you know **just** down here) they will be delighted to share with you. All agree they are NO trouble at all, you just have to feed them everyday and you just throw the corn out, either on the edge of the pond or in the shallow end (they like that - - - the ducks) and corn is their staple. Of course, there are those who would tell you having two dogs are no trouble, but I have a different story to tell but if they weren't a little trouble they couldn't be any pleasure. Then, finally the last of this subject, I asked Eugene and Bea Styron why they no longer had their duck pond and I really never got a reason. They said they still had it but they had moved it behind the house which really wasn't any answer. I think the reason was she put her garden there (this has just occurred to me and may not be the reason at all) because that ground was good and fertilized and since they give us vegetables she may have thought I wasn't country-fied enough to know how vegetables get so pretty and green. ⬍

Love,
Katy

Wildlife Resources Commission officers elected at the January 20 meeting of the Commission are Roscoe D. Sandlin, Chairman (center) from Jacksonville; Jay Waggoner, Vice Chairman, (left) from Graham; and Roy A. Huneycutt, Secretary, from Locust.

PHOTO BY ANDY HOWELL





"Illegal hunting is a major problem facing the wild turkey in America," says Tom Rodgers, Executive Director of the National Wild Turkey Federation with headquarters in Edgefield, South Carolina. Taking the initiative to draw public attention to this problem, the Federation is distributing this poster (shown here by Rodgers) throughout the country. It's the first major project funded by donations and the Federation's membership, Rodgers said, and it's the first step taken by the young organization toward "waging a campaign against illegal hunting."

Posters may be obtained free-of-charge for display in gun and tackle shops, hunt clubs, check stations, etc. by writing The National Wild Turkey Federation, P. O. Box 467, Edgefield, South Carolina 29824.

• STRIPERS — from page 10

"We suspect that, for the most part, these fish live and die in Albemarle and Croatan sounds without ever leaving," said Richard Guier, a Wildlife Commission fisheries biologist who lives in Elizabeth City. "These fish climb the coastal rivers to spawn in the spring and the Roanoke River gets most of the action."

Strangely enough, some biologists and anglers also believe that the huge stripers that winter off Cape Hatteras never entered the sounds or spawn in our rivers. These fish are thought to spawn primarily from Chesapeake Bay north.

Joel is one of those who believes these two populations of stripers don't mix. Joel is Outdoor Editor for the state, and his observation is worth repeating. "I'd believe we'd know it if stripers were running back and forth between the ocean and the sound," he says. "Oregon Inlet is the likely entrance and exit through the Outer Banks, and yet commercial and sport fishermen rarely catch a small striper on the ocean side of the inlet or a big striper on the sound side of the inlet. In fact, very few stripers of any size are actually caught in the inlet. The only good striper fishing at Oregon Inlet occurs when the big ocean fish pass by enroute to their wintering grounds off Cape Hatteras, but even then, the stripers are caught outside the inlet."

It's an interesting puzzle, and I suppose that biologists will give us the answer someday. Meanwhile, let me recommend that you do a little "research" of your own up in the Manns Harbor area this spring. ▲▼

• KERR BASS — from page 15

sers, and a heavy duty rainsuit will protect your body from the wet cold of a spring day. Wool socks and rubber boots will keep your feet warm and dry. For head wear a wool stocking cap is hard to beat. You can wear gloves while casting, removing them to change lures. They may get a little wet from the water from your reel, and by all means remove them when handling a fish. And keep a towel handy for drying your hands after removing a fish. If it is real cold and my hands get numb I pause periodically and warm them by sticking them beneath my shirt.

Spring fishing usually means handling reasonably heavy fish at Kerr Lake, and fishing in stump and debris infested water. This calls for sturdy tackle.

Bait casting tackle is the choice of most experts. They like rods with stiff butts, big free spool reels, and 20-pound test monofilament. Heavy spinning tackle will serve, however, and it doesn't make much difference whether it is the open-face or spin casting type.

By late June the Kerr Lake bass have moved to deep water. They will stay there into the fall, but the bass pros will catch them by fishing deep.

When June passes, however, so does the spring bass fishing at Kerr Lake. ▲▼

ADDRESS CHANGE NOTIFICATION

Name_____

Old Address_____

_____

_____

New Address_____

_____

_____

Zip Code_____

IMPORTANT:

Enclose present Address Label

Please notify us promptly of change of address.

Use this blank to subscribe NOW — $2.00 a year
Add $1.00 for overseas postage
No stamps, please

WILDLIFE IN NORTH CAROLINA New ☐
325 N. Salisbury St., Raleigh, N. C. 27611 Renewal ☐

I enclose $_____; send me WILDLIFE IN NORTH CAROLINA for_____years starting with the earliest possible issue.

Name_____

Street or Route_____

City_____State_____Zip Code_____

Due to rising production and printing costs and likelihood of periodic increases in the subscription price for WILDLIFE, a limit of FIVE YEARS is being placed on new and renewed subscriptions.

STATLIBR* 1SAMPLE9999 1 *
DIV OF STATE LIBRARY
109 E JONES ST NC 27611
RALEIGH

NER
C45
7:39/4

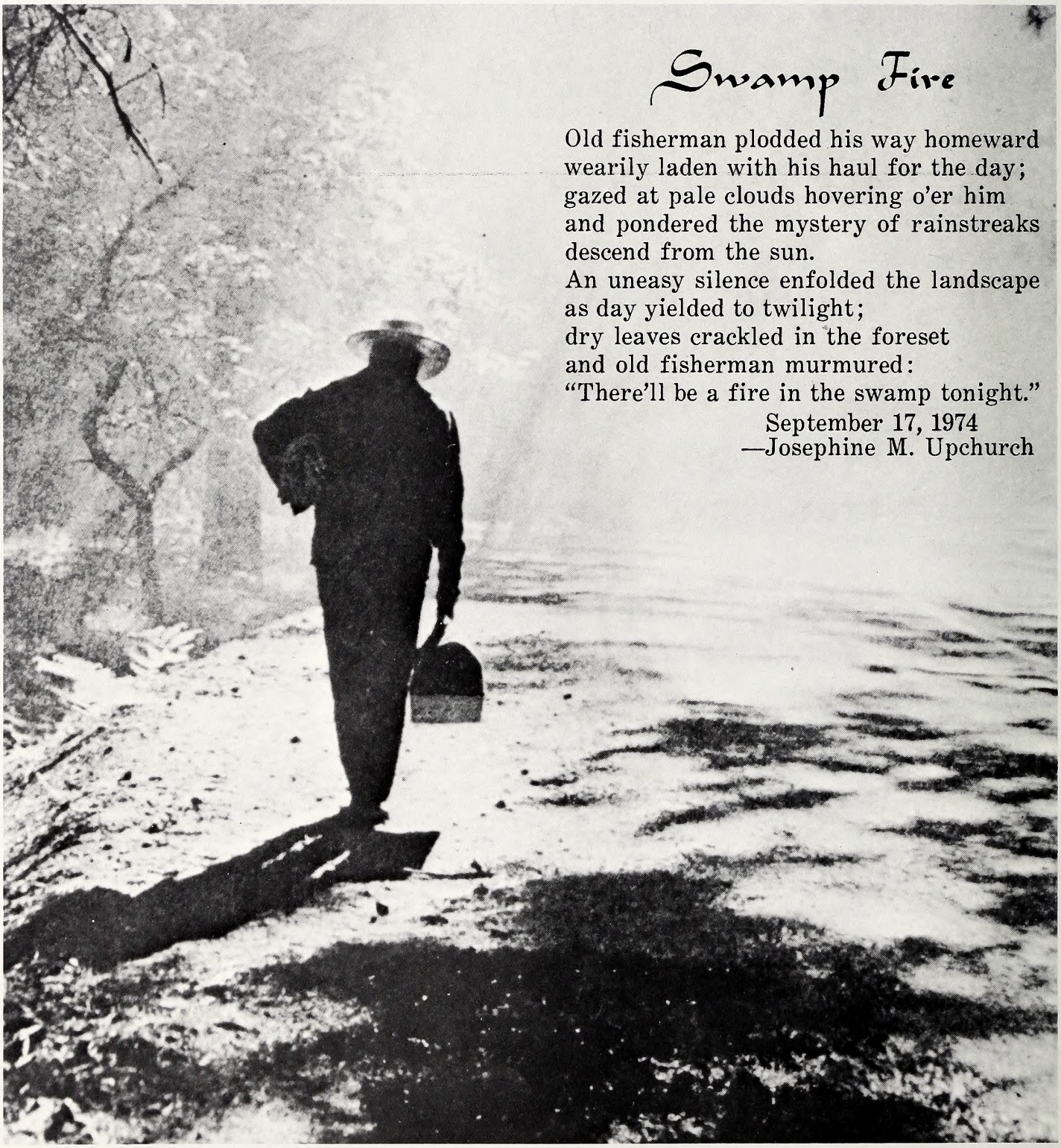
Raleigh

N. C.
Doc.

Wildlife

IN NORTH CAROLINA

APRIL 1975



Swamp Fire

Old fisherman plodded his way homeward
wearily laden with his haul for the day;
gazed at pale clouds hovering o'er him
and pondered the mystery of rainstreaks
descend from the sun.
An uneasy silence enfolded the landscape
as day yielded to twilight;
dry leaves crackled in the foreset
and old fisherman murmured:
"There'll be a fire in the swamp tonight."

September 17, 1974
—Josephine M. Upchurch

STATE OF NORTH CAROLINA

JAMES E. HOLSHOUSER, JR.
GOVERNOR

DEPARTMENT OF
NATURAL AND ECONOMIC RESOURCES
JAMES E. HARRINGTON, JR.
SECRETARY

NORTH CAROLINA
WILDLIFE RESOURCES COMMISSION

ROSCOE D. SANDLIN, CHM. _ JACKSONVILLE
JAY WAGGONER, V. CHM. _ _ _ _ GRAHAM
ROY A. HUNEYCUTT, SECY. _ _ _ _ LOCUST
W. K. ANDERSON _ _ _ _ _ _ _ NEWLAND
WALLACE E. CASE _ _ _ _ HENDERSONVILLE
D. JACK HOOKS _ _ _ _ _ _ _ WHITEVILLE
DR. LATHAN T. MOOSE _ _ WINSTON-SALEM
V. E. WILSON, III _ _ _ _ _ _ _ ROCKY MT.
ORVILLE L. WOODHOUSE _ _ _ _ _ GRANDY

CLYDE P. PATTON
EXECUTIVE DIRECTOR

EUGENE E. SCHWALL ROBERT B. HAZEL
ASSISTANT EXECUTIVE DIRECTORS

DIVISION CHIEFS

REX GARY SCHMIDT _ _ _ _ _ _ EDUCATION
RICHARD B. HAMILTON _ _ _ _ _ _ _ GAME
W. DONALD BAKER _ _ _ INLAND FISHERIES
DONALD E. CURTIS _ _ _ _ _ PROTECTION
CHARLES R. FULLWOOD, JR. _ MOTORBOATS
AND WATER SAFETY

The Editor gratefully receives for publication news items, articles, and photographs dealing with the North Carolina out-of-doors, but reserves the right to reject materials submitted. Full credit is given for all materials published.

Have you moved recently? Change your address promptly. Either send in an old mailing label from your magazine along with new address or type or print complete old label information exactly as it appears on your magazine.

WILDLIFE IN NORTH CAROLINA is published at the Wildlife Resources Commission offices, Albemarle Building, Raleigh, N. C.

Phone Number AC 919/829-7123

* * *

Second class postage paid at Raleigh, North Carolina 27611.

* * *

SUBSCRIPTION RATE—$2.00 per year (12 issues). Add $1.00 for overseas postage except APO, Canada and U. S. possessions. Back issues —$.25 per copy plus $1.00 minimum for handling and mailing; back issues may not be available. Send check or M. O. payable to WILDLIFE RESOURCES COMMISSION. Stamps cannot be accepted. Any employee of the Wildlife Resources Commission may accept subscriptions, or send to WILDLIFE, Albemarle Building, 325 N. Salisbury Street, Raleigh, N. C. 27611.

Wildlife circulation this issue 84,260

Wildlife IN NORTH CAROLINA

The official publication of the NORTH CAROLINA WILDLIFE RESOURCES COMMISSION, Raleigh 27611. A monthly magazine devoted to the protection and restoration of our wildlife resources and to the improvement of hunting and fishing in North Carolina.

VOL. XXXIX NO. 4 APRIL, 1975

IN THIS ISSUE

Swamp Fire
by Josephine Upchurch ..... Page 2

White Oak River Impoundment
by Rod Amundson ..... Page 4

Flyfishing for Panfish
by Jim Dean ..... Page 7

Near Tragedy
by Jim Hudson ..... Page 8

Paddle Your Way to Adventure
by L. S. Lane ..... Page 10

Learning the Easy Way
by Dorothy Wilbur ..... Page 12

Resource-O-Gram ..... Page 13

Suddenly It's Spring
Paintings by Josette Gourley ..... Page 14

Fishers at the Pond
by Paul Koepke ..... Page 16

Stem to Stern
by Ed Jenkins ..... Page 19

Tar Heel Retriever Club
by C. F. Raymer, Jr. ..... Page 20

Purple Martin Colony
by J. A. Lee & D. S. de Calesta ..... Page 22

Croatan Game Lands
by Grady Barnes ..... Page 24

Crackshots and Backlashes
by Rod Amundson ..... Page 26

EDITORIAL STAFF

DUANE RAVER _ _ _ _ _ _ _ _ _ _ EDITOR
LUTHER PARTIN _ _ WRITER-PHOTOGRAPHER
JIM DEAN _ _ _ _ WRITER-PHOTOGRAPHER
TED DOSSETT _ _ _ WRITER-PHOTOGRAPHER
ROD AMUNDSON _ _ CONTRIBUTING EDITOR

An objective of all levels of government should be to achieve and sustain a balance of the social, ecological, and economic benefits derived from natural resources. Without such balance none of the factors on the scale will be worth weighing.

The yellow-shafted flicker prefers fairly open country which has some large trees for insect hunting and nesting. Frequently they can be observed probing for ants with their long, sticky tongues. The male flicker has a black "mustache" which the female does not. More birds by Charlotte artist, Josette Gourley are on pages 14-15.

White Oak River Impoundment

by Rod Amundson

Photos by Rex Schmidt

AN early fall duck hunter swung on a brace of blue-winged teal and dropped them in one-two order. Ten years ago the birds probably would not have been there, and oddly enough the hunter could thank salt-water mosquitoes *(Aedes sollicitin)* for his good fortune.

It was a warm, sunny November day when Rex Gary Schmidt and I visited White Oak River Impoundment. A brisk southwest wind was blowing, rippling the water where it wasn't choked with marsh vegetation. Clad in waders and too-warm clothing we were making our way through a "crossover" led by Ed Weaver, Jr.

Ed is a graduate student of biology at East Carolina University, who has been making an intensive study of the marsh. He too was wearing waders and feeling his way along the crossover with a five-foot snake depressor to keep us from being dunked in some eight feet of chilly, dark, brackish water. Rex, carrying about 40 pounds of camera equipment, followed Ed, and I brought up the rear.

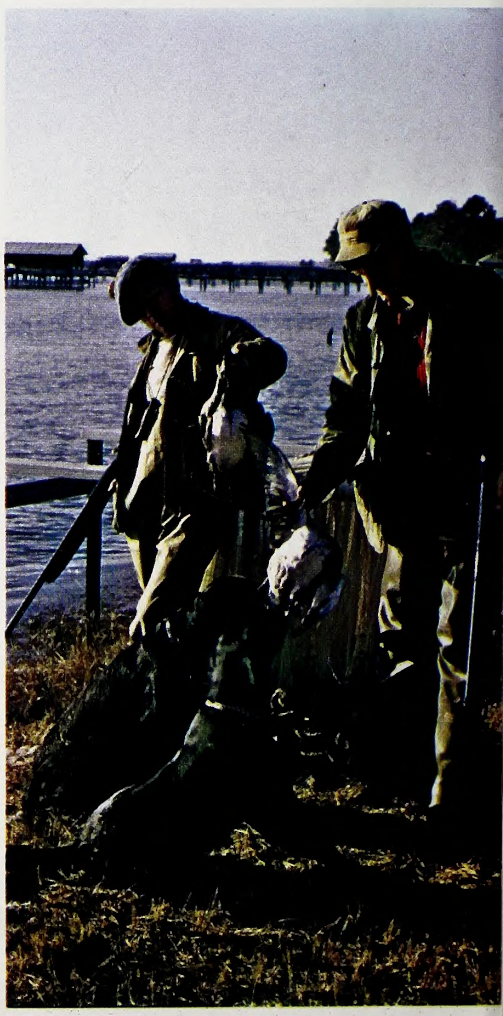
After some tricky footwork we reached a point where the water was consistently only about two feet deep. The crossover was one of six points on an eight-foot deep canal between the dike, which completely surrounds the marsh, and the natural marsh bottom, and where soil had been scooped out to build the dike, but where the water is shallow enough to permit wading across. (If that sounds complicated, try crossing a crossover without getting your crupper wet.) The crossovers are marked with creosoted fence posts that serve little more than to indicate where wadable water is generally located.

As we went farther into the marsh, a pair of coots scurried into hiding in the tall marsh vegetation while four others hydrofoiled over the surface for 20 yards before darting into the reeds along the canal. Overhead a couple of turkey vultures soared on a thermal, and farther to the north we could see a pair of ospreys hovering over the White Oak River.

WHITE Oak River Impoundment lies in the northeastern corner of Onslow County where it is separated from Carteret County by the White Oak River. The dike was built in 1966 by the Onslow County Health Department as a means of marsh mosquito control, and has been placed under jurisdiction of the Wildlife Resources Commission as a 100-acre part of the public Game Lands program classed as a waterfowl impoundment.

Between the impoundment and the adjacent White Oak River is a water control gate that is used to keep water in the marsh at a fairly constant level. During summer months when the water level is reduced by lack of rainfall and a high evaporation rate, portable centrifugal pumps are brought in to pour in water from the river.

Text continued on page 6



Marsh management, using techniques of the types described here, is a fairly new science. The procedures are designed to assist Nature in providing a better home for waterfowl and the wildlife associated with this environment. The result: more productive marshes and better waterfowl hunting.

Inspecting the marsh area is a tricky proposition and must be done carefully when you're wading. Signs like the one shown at right, at least warn you of the situation. Duck hunters are cautioned to be extra careful because of the cold water they experience in the winter.

Various marsh wildlife species often hide in the heavy rushes in the shallow water, and you never know what will pop out (left). Burning of unwanted vegetation is an important management tool. Here, Randy Wade, East Carolina University student (left, above) and Lanny E. Hollowell, Game Management Technician, begin a burn which must be done with care and in the proper area.

White Oak River Impoundment

It is interesting to note that when the pump is turned on, hundreds of blue crabs come up to where the water is pouring in. This, perhaps, is because the water in the marsh has a lower salinity than that of the river due to heavy rainfall in the area, and the crabs are attracted by the higher salt content of the incoming water.

Over the period Ed Weaver has been studying the marsh, he has made a comprehensive survey of the plant and animal species that live there or are temporary visitors. A complete listing of these will be contained in his master's thesis. His research was supported in part by the Wildlife Resources Commission.

With only about half a day spent on the marsh, it was obvious to Rex and me that the marsh contains a tremendous wildlife population compared to the marshes along the adjacent river. We saw black ducks, wood ducks, mallards, teal, pintails and widgeons, plus a large number of coots and Florida gallinules. There were crows in the woods along the south side of the marsh, we saw marsh hawks, red-tailed hawks, as well as ospreys and vultures. There were long-billed marsh wrens and other songbirds.

Around or near the marsh are 12 species of trees and shrubs, many of which provide food for wildlife. Growing in the marsh proper are sedges, cattails, cordgrass, juncus or black grass, and spike grass, with a sprinkling of fruit trees along the dike. Floating on the surface were large quantities of highly nutritious widgeon grass, which had been uprooted by ducks and coots that had been feeding on it.

Where reptiles are concerned, Ed Weaver knows of at least four small alligators that live in or frequently visit the marsh. We saw three large brown water snakes sunning themselves atop the dike. There are plenty of cottonmouths around. Although we saw none of these we were glad Ed had his snake stick with him.

Along the dike there was abundant evidence of the presence of marsh rabbits, muskrats, mink, river otter, raccoons, and foxes. It did not take long to get the impression that White Oak River Impoundment is a wildlife paradise. And judging from the number of spent shotgun shells along the dike, it is also a waterfowler's heaven.

BEING part of the Game Lands system, the marsh is open to public waterfowl hunting. No blinds are provided, and hunters are not allowed to build blinds. There is sufficient natural vegetation, however, to conceal a host of hunters who can simply wade out into the marsh and hide in the tall reeds and rushes.

A word of caution is in order here: Hunters should enter the marsh only at crossovers marked by black creosoted fence posts, and enter with extreme caution, using some kind of pole or prod to feel the way along.

White Oak River Impoundment is one of several mosquito control projects along the coast. It is unique in being the farthest inland. Because water levels can be controlled, all impoundments can be managed for maximum production of wildlife species.

There is some objection to impounding marsh land on the part of ecologists who contend that they prevent valuable plankton and nutrients from entering estuarine waters that serve as nursery beds for shellfish and finfish. The validity of this contention is debatable. The impoundments consist of only a tiny fraction of the total coastal salt marsh area. Further, all are equipped with water control gates, and during periods of heavy rainfall there is a considerable outflow of plankton and nutrient-laden water. When the water level in the marsh is high, strong winds drive large quantities of water from the Impoundment into the river, too.

When Rex, Ed, and I were preparing to leave the marsh we saw a rather dramatic example of waterfowl impoundment management. The southwest wind was strong enough to drive water from the marsh into the river. Randy Wade, student from East Carolina University, and Lanny Hollowell, Game Management Technician on the Eastern Game Lands region, (see October 1973 issue, WILDLIFE IN NORTH CAROLINA) arrived at the marsh armed with pressure torches of the kind used for controlled burning in forest management. Their assignment was to burn openings in the dense growth of frost-killed blackgrass. The strong wind caused the plants to burn with almost explosive speed, sending up clouds of black smoke and spectacular red flames.

The burn-off created more feeding and resting space for ducks and better shooting for the hunters. ◆

Marsh lands are not waste lands, but form a very important part of the coastal environment. Many species of aquatic mammals and birds depend on these dwindling areas for their very existence.

FLYFISHING FOR PANFISH

FISHING

PHOTO BY JIM DEAN

by Jim Dean

I'M sure there are lots of things more enjoyable than fishing for panfish with a flyrod in April and May, but for the life of me, I can't think what any of them might be.

This time of year, I like to drive a few miles to a good farm pond and launch a 12-foot jon-boat, then paddle around until I find a thick bed of spawning bluegills.

Such beds are not hard to find. You merely look for the "craters" in the bottom of the pond, usually in shallow water near the bank. Bluegills construct these circular depressions during spawning season, and if you look closely, you can see fish flitting back and forth across the beds.

Drop a small popping bug or slow sinking fly on top of a bed and it's an almost certain bet that you'll be hooked up with a slab of finned energy that can move so fast your line will fairly sizzle as it cuts the water.

I sometimes fish several ponds during the day, and it is no problem to catch more fish than you can possibly use. I usually release most of them, keeping only a few for supper. Most ponds will yield bluegills and other panfish in the six- to eight-ounce category, but some well-balanced ponds grow much bigger fish. Among the bluegills and shellcrackers my friends and I caught on flyrods were some in the 18- to 20-ounce class. Joel Arrington, who fished with me several times, caught one whopper bluegill that weighed 32 ounces.

A surprising number of fishermen still consider a flyrod a toy, but during the spawning season, an experienced fly fisherman will catch at least as many panfish as someone using natural bait or artificial spinners. In other words, fly fishing for panfish is more than just fun — it's also a deadly way to fill a stringer.

If you've been meaning to try this kind of fishing, here are a few tips that may help you get started. First of all, don't worry about any problems you might have learning to flycast. It's not hard, and a little practice should have you catching fish the first trip. Casts over 30 feet are rarely necessary.

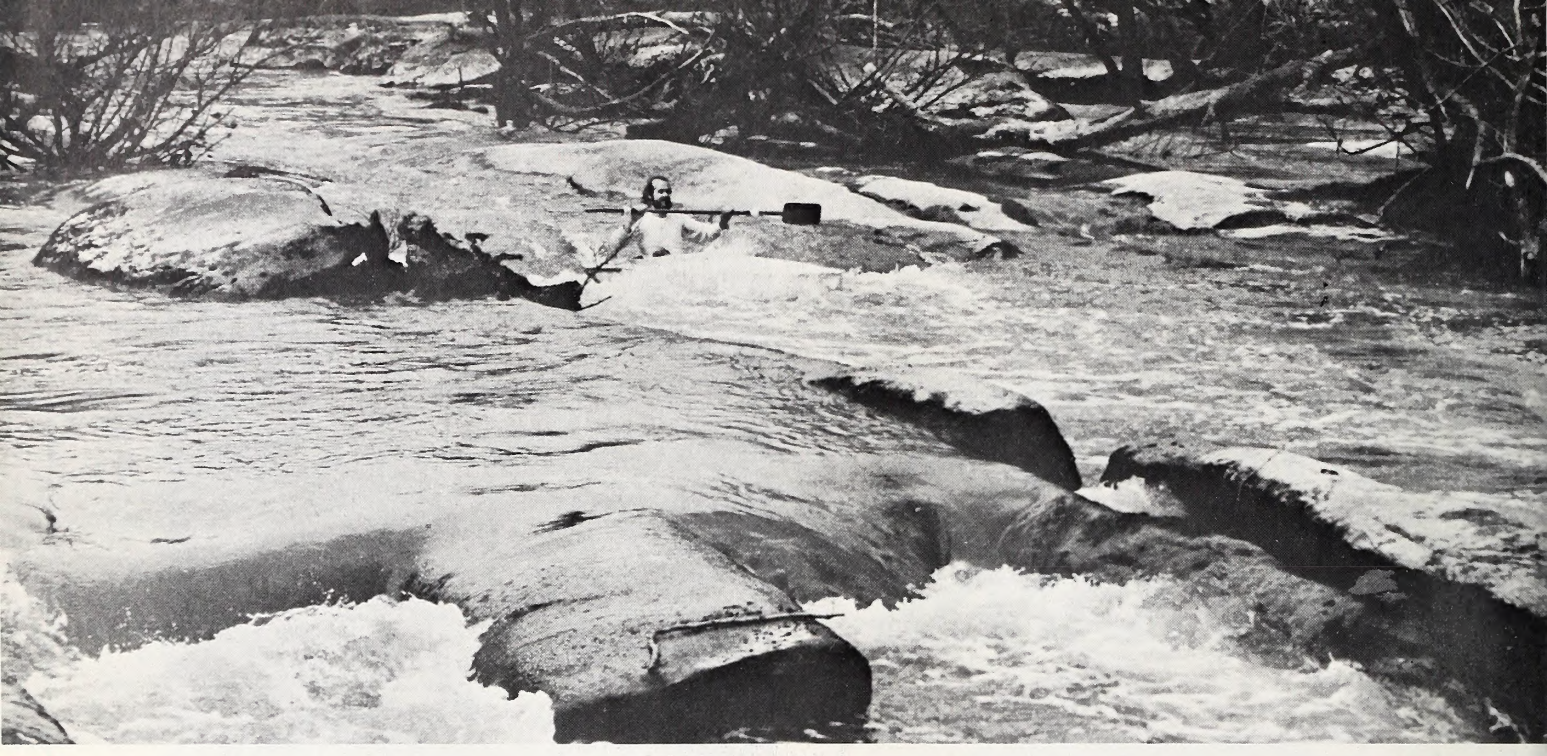
Also, although the cost of fly fishing tackle is up — along with other fishing gear — you can still get a good outfit for about $25 to $50 (rod, reel and line).

Keep in mind that there is no such thing as the all purpose flyrod. The rods I'm going to recommend will perform best for panfish (or trout) but will be too light for most bass fishing. If you already have a long (8½ to 9 foot) bass rod and don't want to buy a special one for panfish, you can use it, but it won't be ideal.

For panfish, I'd suggest that you acquire either a 7½ foot flyrod designed to balance with a No. 6 flyline or an 8-foot flyrod designed to balance with a No. 7 flyline. I sometimes use shorter rods, but like these better. Prices will vary from about $15 to well over $100 for a good glass rod but you don't need to buy the best. A very good rod can be had in the $20 to $35 price range. By all means, purchase a glass rod, and avoid obscure brand names. Also, pick a rod with either a "standard" or "medium" action. Avoid those designated as having a "fast tip."

If you're handy at building things, you might consider constructing a rod from a kit. It's not

• **continued on page 26**



Near Tragedy Provides Valuable Experience

by Jim Hudson
Photos by Ms. Micki Hunsucker

WE planned the trip at the last minute; we had no positive idea where we would start or stop, and it had been months since I had even been fishing on the Neuse River, just east of Raleigh, N. C. But my wife, a friend Cal, and I decided to spend that Sunday floating, taking pictures, and picnicking along the river anyway. We always enjoyed the river, and we were looking forward to a full day of fun.

The weather was perfect for February; sunny and clear, and about 68 degrees. The water was still cold, but we didn't plan to put anything in it but the boats and our paddles anyway.

About nine a.m., Karen and I met Cal below the Highway 64 bridge and decided to take our time and enjoy a leisurely trip down to the Poole Road bridge. We could paddle the distance in an hour or so, but with all the side streams, short, fast spots, and rocky areas to explore and challenge, we knew we would spend a full day on the trip.

Karen and I put our Folboat in the water, and she got settled into the bow as I steadied the boat. Then, just as I was about to climb in, the soft mud bank collapsed and my foot slid toward the water. I lunged into the boat and landed safely except for one very cold left foot. I had on tennis shoes though, and it wasn't too long before I was nice and dry again.

Cal launched his Fiberglas, single-seat kayak, and we paddled south down the river. Almost immediately we were impressed by the amount of debris littering the shore and snags all along the river. Then we noticed a pipe protruding from the bank with a foaming, dark liquid flowing from it.

We took a number of pictures of the pipe, and everything from a plastic swimming pool, to dead fish, to cans, to a laundry basket, strewn all along the river. All of that garbage all over the place really makes me wonder how many people are seriously concerned about keeping our waters clean. It also encourages me to be more careful about cleaning up after an outing, and keeping film packages and such things out of the river and in trash containers. A little bag in your boat just doesn't take up as much room as litter does in the wild.

It didn't take us long to tire of looking at litter, so we decided to move on downstream to a short run of fast water. I had been through this area a number of times before, and it always provided some exciting moments. This time proved to be no exception.

About 1½ miles south of the Highway 64 bridge, the river divides into a broad, flat right fork with a swift narrow chute on the left. To get into the chute, you must make a sharp left turn right where the river divides, and paddle parallel to a three foot fall for about 30 feet. You must then immediately steer hard to the right and zip down the middle of the chute, avoiding rocks, both submerged and in sight, all along both sides. Only seconds later you must move right to avoid a 12-inch log emerging from the water on the left and allowing only a five-foot passage on the right.

Once past the log, the danger is mostly over and you can relax a little. But you must still remain alert for the sometimes present whirlpools and small haystacks that can change your course, or even swamp your boat. The whole ride from the smooth water above the chute, through the chute, and into the placid river below should take only one and one-half minutes or so. And if you enjoy your trip and want

to try it again, you can always paddle back up the right side of the river and run the chute again.

Well, on this Sunday, Cal decided to take some pictures as Karen and I attempted to run the chute. We beached our Folboat upstream from the chute and planned exactly where we would go. Cal selected a spot beside the chute and got his camera ready for some "white water" action shots.

Once everyone was ready, Karen and I got back in our Folboat and paddled upstream about 100 yards to get up some speed before attempting to cross the current and go into the chute. We then paddled downstream, made our turn, just in front of the fall, and paddled for all we were worth for what seemed like minutes. The Folboat moved closer to the three foot drop, sideways, and inched forward at the same time. We both thought that we had miscalculated and had turned too late, because it seemed that we were going to drop off before we got into the chute.

We both put our heads down and strained at our paddles, and at what had to be the last safe (?) instant, we broke out of the cross-current and entered the chute. Our instant feeling of relief lasted only briefly since we both knew that our job had only begun.

Once in the chute we pointed our bow directly at the center of the channel and bounced through the first standing wave. Then I realized that we had been bounced by the wave into a collision course with the log over the left of the chute. No problem, I thought. All I had to do was steer slightly to the right.

Just as I dipped my right blade, we hit a submerged rock; only slightly, but enough to turn all 17½ feet of our Folboat sideways. The very next second we were against the log, broadside, with the whole Neuse River rushing against the side of our boat.

It was then that I came to respect the true power of even the relatively placid Neuse River. Before Karen or I could even move, the boat was flipped upside down, sucked under the log, and swept off down the chute. Karen and I balled up, covered our heads with our arms for protection, and washed off down the river. We were not held under long. The shock of suddenly being thrown under that fast, cold water caused us to react quickly and come to the surface fast.

Luckily neither of us was hurt, and we both surfaced at nearly the same instant. The current was too swift to stand, so I held Karen by the arm and we allowed ouselves to be swept down the chute. Fairly quickly we were washed to the left bank where we climbed out to check each other for any injuries. A few bruises and some very wet clothes along with concern for our boat were our only complaints. During the next few minutes, we stood and watched the river as we realized just how lucky we were to be still in good repair.

Karen and I are very good swimmers and we both feel we can take care of ourselves in most situations. But this time everything happened so fast and so powerfully, that no skill or training could have helped us at all. We were completely at the mercy of the river for those brief moments, and luckily we came out with no real ill effects. We have always believed that life jackets and other such safety devices are important. But now we both *know* that we will never consider running even a quiet stream without having them available. You can be prepared and be safe, but if you are not prepared, the river may show you no mercy.

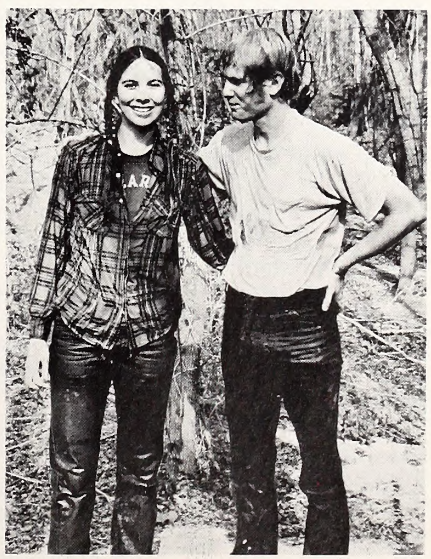
Cal got a few pictures as we were entering the chute, but as soon as we got into trouble, he put down his camera and came to help us. So, we do not have any pictures to show exactly how we looked in the water; only some "before" and some very wet "after" shots.

Once out of the river, we collected ourselves and began to search for our boat, gear, and paddles. Cal paddled downstream over ¼ mile to recover the paddles, and I found the boat upside down about 200 yards below the chute, lodged against a tree in about four feet of water. Holding to a vine, I waded out into the river and pulled the boat farther downstream to a low place in the bank. We turned the boat over and found all our gear still inside, and the boat undamaged.

After emptying all the water and laying our gear out to dry, we all sat back to share Cal's lunch. Ours was too soggy to eat. A little food and drier clothes, also supplied by Cal, lifted our spirits enough that we decided to go back up the river and try some lesser chutes to the right of the main chute. Any apprehension we may have had about the river only

• **continued on page 27**

River boating must be approached with considerable caution and even experienced boaters can find themselves in difficult situations. The author and his wife considered themselves lucky to come out of this one unhurt.



Paddle Your Way to Adventure

This is the first of a series of three articles on the canoe and how to use it.

by L. S. Lane

One of the most romantic forms of inland water transportation is the canoe. From early times, canoes have had certain advantages over boats for many types of water. They are light and therefore portable. Canoes travel fast, with a minimum of effort and water disturbance and can handle large loads of duffel and cargo in rapid water. They may be taken into wilderness areas where larger, heavier types of watercraft could not be hauled.

The canoe is one of the oldest modes of travel in America and their popularity for use as a recreational vehicle has risen considerably in the last decade.

The canoe is relatively inexpensive when compared to other types of boats. There are many different types of canoes on the market, each type being specifically designed for use as camping, rough-water, or as hunting or fishing craft. There is no "all purpose" canoe on the market, but with a little thought to the primary use of your canoe, you can purchase one that will serve for many different types of outings.

The birth of the canoe probably came when primitive man, riding his log downstream, conceived the idea that he might be able to ride inside the log instead of on it. The dugout canoe had its beginnings in that historic moment.

The dugout canoe, or pirogue, had to be patiently carved out of a single suitable tree trunk. There were various ways to do this, but the bulk of the wood was removed by burning the log, and chopping out a cavity with a primitive adze.

To improve the dugout canoe, certain modifications were attempted. The gunwales of the dugout were raised by the addition of hewn planking along each side. Finished dugouts were often split down the middle, to give added beam width and stability, and the halves joined together at the bottom with a hewn plank.

The next breakthrough in the development of the canoe came when man conceived the notion that stretching tough, pliable skin over a wooden framework could be substituted for solid planking.

The skin canoes and boats themselves have had an interesting development. As late as the colonial settlement of America, bullboats were extensively used. These were small craft made by stretching buffalo hides over willow framework.

The Eskimo kayak is another form of the skin-over-framework design. The kayak is a long narrow craft, pointed at either end, which is propelled by a double-ended paddle. The skin covering of the early models included not only the bottom, but all the deck area with the exception of a small round aperture, or cockpit, at the craft's center. The paddler sat in this opening and buttoned a skin apron, worn around his waist, over the aperture, making the entire hull watertight.

The birchbark canoe was an American Indian invention and was one of the most successful of the handcrafted canoes. A craft of light weight and high utility, it was made in great numbers in North America until the stands of suitable paper birch were depleted.

The American canoe evolved from the birchbark stage to the canvas and wood canoe popular in grandfather's time.

The canvas canoe is still very much with us, although in annually decreasing numbers. And I suppose the day will come when it will take its place as a museum piece.

Yet it persists, available in several sizes and models,

Aluminum canoes, like those being loaded in the early morning above, are usually preferred for minimum upkeep and durability. But, canoes come in all sizes and materials, like this Old Town Rushton of molded fiberglass. Each type has its purpose.

OLD TOWN CANOE CO.

to supply the needs of canoemen who appreciate its quietness on a wild shore at evening and for those with a romantic penchant who associate it, and justly, with the birch-bark canoe of yesteryear. Some old-timers contend they maintain better headway against the wind than aluminum. They are naturally buoyant, requiring no flotation chambers, and contrary to popular opinion, they are no heavier than standard grade aluminum canoes. Only the so called "lightweight" grade of aluminum canoe is lighter than the wood and canvas.

The wood and canvas craft is tougher than the aluminum advocates would have you think. However, it must be granted that a sharp rock will cut the canvas, and you may easily split a rib or section of planking if you strike a boulder while running a swift sluice. It does need frequent refinishing to prevent its absorbing moisture and thereby adding weight. If you are the type of canoeman who enjoys stealing stealthily along quiet streams, and if you're willing to devote care and attention to your craft, you'll find the wood-and-canvas canoe far superior to any other type.

Very few Fiberglas canoes qualify as wilderness craft. On the whole, they are smaller than either the wood or aluminum models, usually narrower in beam and shallower in depth, in a given length. This is probably an attempt by their makers to produce Fiberglas canoes within the weight limits set by aluminum or canvas.

On the other hand, Fiberglas is seamless, impervious to marine parasites, rot or electrolysis, and needs little maintenance or caution in use in either fresh or salt water.

For the modern canoeman, aluminum craft seem to have gained the most in popularity. Few knowledgeable canoemen buy an aluminum craft solely because of its reputed lighter weight. They buy it for its durability, its toughness, and because it requires no upkeep. It is not completely indestructible, but it does glance off rocks without much damage, and it can be dragged over gravel bars. You will dent an aluminum canoe hull oftener than crack or rip it open, but even at the worst it is surprisingly easy to repair.

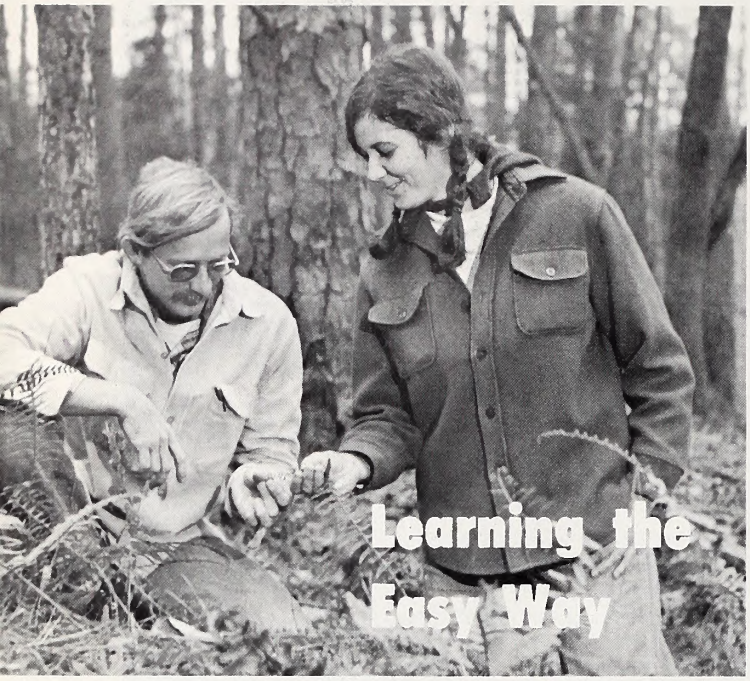
Aluminum canoes are not completely without shortcomings. They can be noisy, and a poorly made hull will "pong" as panels flex under pressure and temperature change. Stealing silently along the shore is virtually impossible. Another quirk is its extreme buoyancy when lightly laden. This sometimes makes it difficult to handle in a high wind. However, balance out the drawbacks and the advantages and the aluminum canoe evolves into a superior all-round craft, well adapted to wilderness trips.

With canoe prices at an all-time high, its not surprising that a number of do-it-yourself canoe-building kits have appeared on the market. With these you can build a canoe inexpensively and produce a craft suitable for relatively quiet waters — but I would not want to trust my outfit aboard one of then. Such canoes are generally small, and in order to make their construction possible in home workshops, framing and planking are often inadequate for a rough-water canoe.

Paddles for a canoe, unlike oars for a boat, should be related in size to the man, not the craft. A paddle should be just a bit shorter than the person using it. However, for best results the man in the stern should use a paddle just under five inches shorter than his height.

Several types of hardwood are used for paddles. Maple, while heavier, is sturdier; ash, the more flexible. As a rule, women prefer spruce paddles, not as limber as maple or ash, but much lighter in weight.

The wide versus narrow blade controversy has raged as long as men have used canoes and is still not settled. Theoretically, a narrow blade, 5- to 6-inches, is easier to draw through water but it affords less power surface. A wide blade, 7- to 8-inches, will give you a substantial "bite" but requires more energy to wield. The choice must be yours. I prefer a wide blade, particularly in the stern, since the canoe answers more readily. Whatever type of blade you choose, make sure it has a thin edge. This slips quietly into the water and can be feathered for a soundless "Indian stroke." A thick-edged blade "plops" noisily.



Learning the Easy Way

UNC Photo

While most of the earlier courses are already full, the mountain courses are still open. These are:

Smoky Mountain Spring Wild Flower Camp, May 8-11. Cataloochie Valley, Great Smoky Mountain National Park.

Smoky Mountain Wild Flower Trail Ride, May 11-14. Cataloochie Valley, Great Smoky Mountain National Park.

Mountain Nature Study Workshop for Summer Camp Staff, May 15-18. Camp Mondamin, Tuxedo, N. C. (For further information and applications for the above three courses, write: Mr. Frank Schell, Mondamin Wilderness Adventures, P.O. Box 8, Tuxedo, N. C. 28784).

Mountain Ecology Workshop, May 18-24. The Audubon Colony, Sherwood Forest, Cedar Mountain, N. C. (For registration or further information write: The Audubon Colony, Sherwood Forest, Cedar Mountain, N. C. 28718.)

by Dorothy Wilbur

• People from all over the state will have the opportunity to learn more about our native plants due largely to the efforts of the North Carolina Botanical Garden. Although the Botanical Garden itself is at the south edge of Chapel Hill, the Garden's programs spread across the state (see map). This spring, for instance, you will be able to participate in such activities as the Smoky Mountain Wild Flower Camp, or a Wild Flower Trail Ride. These can provide a restful escape to the mountains to camp and take long, leisurely walks or horseback rides in the valley, up the coves, and along the ridges around the Cataloochie Valley with Dr. C. Ritchie Bell, Director of the N. C. Botanical Garden, as instructor to point out interesting characteristics and local uses of the native mountain spring plants.

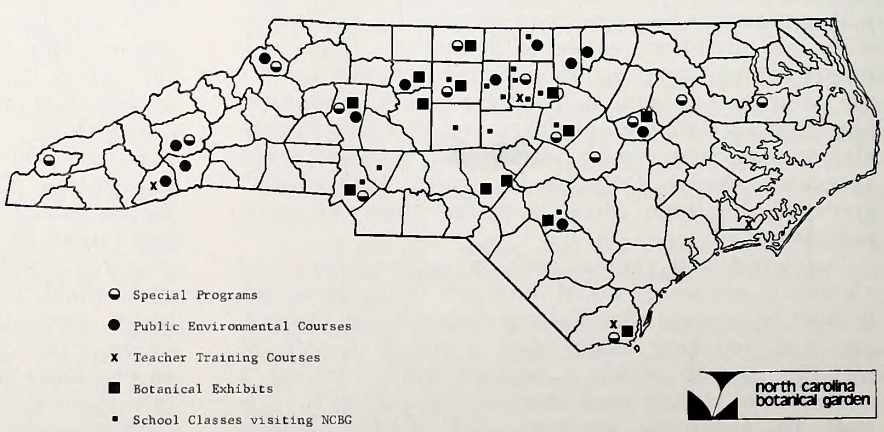
Later in May, there will be a three-day workshop on "Natural History and Ecology of the Mountains" for summer camp staff members. This will be followed by a six-day session of field trips and informal instruction on the plants and animals at the third annual "Mountain Ecology Workshop" at the Audubon Colony at Cedar Mountain, N. C. A staff of professional naturalists will lead walks along the cool mountain streams and through the lush flora of the forests while discussing the plants, birds and general ecology of one of the richest biological areas of North America. The participants can camp or stay in one of the motels nearby, or rent one of the cabins at the Audubon Camp.

In the Raleigh-Durham-Chapel Hill area, special courses (some of which carry certificate renewal credit for teachers) are being given this spring to help teachers bring realistic environmental education to their students at a local level. The teachers will learn gardening projects, ways of demonstrating both natural and technological recycling of biological or other materials, or arts and crafts with plants to take back to their classes. Other Botanical Garden extension courses open to the public, such as "Plants in Winter," "Spring Wild Flowers," "Trees," "Birds," "Natural Dyes," "Plant Propagation," and "Nature Photography," acquaint interested amateurs with the birds and plant materials in their area of the state.

Whenever possible, the Botanical Garden's extension courses (which must be completely self-supporting since no state funds are allocated for these programs)

• **continued on page 27**

NORTH CAROLINA BOTANICAL GARDEN STATE PROGRAMS



NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Leaky Boat Fuel Tank?

Word again this year has been received from the U. S. Coast Guard that self-contained terneplate fuel tanks (steel coated with a lead-tin alloy) have a tendency toward corrosion which may lead to deterioration and subsequent leakage of fuel into the boat. Have fuel tanks inspected at least once a year.

Spring Gobbler Season

The wild turkey season (bearded turkeys only) extends from April 12 through May 3, except counties in and west of Stokes, Surry, Wilkes, Alexander, Caldwell, Burke and Cleveland where the season is April 19 through May 10. Gates County is closed by local law. Bag limits are 1, daily; possession 2; season, 2. You must have a Special Big Game Hunting License, and you must have each turkey killed tagged at a Wildlife Cooperator Agent location.

Last Call for Public Hearings on Hunting Regulations

Public Hearings on the 1975-76 Hunting and Trapping Regulations will be underway very soon. Depending on when you receive this magazine, you may have missed one or two of the eastern ones. Each meeting is scheduled for 7:30 p.m.

Date	Location
April 7	Courthouse in Edenton
April 8	Courthouse in Jacksonville
April 9	Courthouse in Tarboro
April 10	Courthouse in Elizabethtown
April 11	Courthouse in Graham
April 14	Jackson Co. Community Service Center in Sylva
April 15	Western Piedmont Community College in Morganton
April 16	Courthouse in Yadkinville
April 17	Central Elementary School in Albemarle

E-Z Loader Boat Trailer Problems

Information from the U.S. Fish and Wildlife Service Regional Safety Manager indicates that a 1970 E-Z Loader boat trailer designed to carry a boat weighing 3,000 pounds sheared all six lug bolts on one wheel; partial shearing was taking place on the other wheel. If you have an E-Z Loader, better check this out.

Want to Help with Bass Survey?

Bass fishermen and bass clubs who want to help compile information for the Wildlife Commission's Largemouth Bass Catch Survey, and who are willing to work on this project over a lengthy period of time, are urged to write Larry Birchfield, Division of Inland Fisheries, N. C. Wildlife Resources Commission, 325 N. Salisbury Street, Raleigh, N. C. 27611.

Carolina Wren

Mockingbird

Towhee

Suddenly

The resident mockingbirds, tow
cardinals and Carolina wrens s
to do little if any migrating fro
the Carolinas — they do wande
winter, dispersing to the avail-
able food supplies. But they ca
be seen all year round, espec-
ially if feeding stations
have been established. Birds
form the first line of
defense against insects and
weeds; great quantities of these
pests are eaten every day. Let's
welcome the birds and spring.

ugh many of our most familiar
irds have been with us for
long winter months, it seems
hey take on new life and even
rilliance as spring returns
nore. Some of the songsters
urn from warmer regions
ettle down to the task
ting. "Our birds"
come "home."

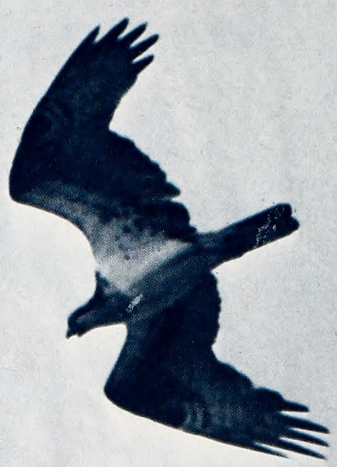
t's Spring

Cardinal

Robin

Fishers at the Pond

by Paul Koepke
Durham



THERE are a lot of fish in our acre pond. Bluegills, pumpkinseeds, warmouths, shellcrackers, and largemouth bass abound, and from time to time throughout the year our friends and acquaintances come with their spinning rods, fly rods, or cane poles to pit their skill and wits against the piscatorial odds. But there are others whom we know only by sight and they come unbidden on a misty morning, a mizzly afternoon, or in the full, bright shine of a spring day. They do not arrive in pick-up trucks or station wagons but rather by air, and they scorn the elaborate battery of tackle most fishermen carry, preferring to do it the hard way with fine-honed talons or a swift and deadly bill.

One of these experts visits us only once a year for a day or two, and about the first of April we begin to watch for its arrival. Sometime during the next two weeks we are sure to spot it wheeling slowly over the pond, see it stall, form its wings into a **W** and plummet headfirst toward the surface. At the last possible moment it will brake suddenly, bring its powerful talons forward, and hit the water with an immense splash and flurry of wings. Then it will rise laboriously with a fish in its iron grip, turn it so that it points head forward to reduce drag, and, like a torpedo bomber, head for its temporary hangar in the belt of pines just to the north. It's always an anxious moment for us until it clears the intervening power lines, and its choice seems to be determined by the weight of the fish it is carrying. If the fish is large, the bird will pass below the wires and wait until it reaches the open field beyond before it tries to gain altitude.

Once it is out of sight we breathe a sigh of mixed relief and satisfaction. The osprey is back again and spring is really here. It will probably return a time or two to feed before taking off for its permanent nesting site, and the few fish we lose to this splendid bird — last year he took three in four tries, an excellent batting average — will never be missed. Besides, we feel that the show it puts on is well worth the price of admission.

AN even rarer visitor to the pond is the relatively tame common, or American egret which will glide in through the mist like a white spectre, stalk the shallows for a time, and then as silently depart, not to be seen again for months or even years.

Unlike the egret, the great blue heron seems to have much less tolerance of our presence and the slightest movement on our part is enough to make it stuff its neck back into its shirt, spread those immense wings, and take off for quieter parts. When the pond and yard are deserted, however, it will approach quite near the house, sometimes crossing the front yard near the water's edge as though treading the measures of some antic pavane, pausing now and then to examine the shallows intently for signs of life.

On one occasion a pair of muscovy ducks strayed over from our neighbors' to puddle about in one of the great blue heron's favorite fishing holes. This seemed to cause it some irritation for, with long, implacable strides it moved in on the trespassers. The ducks saw it coming and, with many querulous complaints, began to waddle off in some haste. The female kept going but the drake — something of an addlepate in my opinion — seemed to lose track of events, forgot what he was about, and stopped to collect what few wits he had.

That was where he made his big mistake, for, as in duckish thought he stood, the heron approached, drew back that long, serpentine neck and, with the impact of a trireme, rammed him squarely in the sternsheets with his beak. This lesson, applied to the drake's seat of learning seemed to motivate him marvelously. After appearing to run off in three or four directions simultaneously, he finally took wing followed by the carping female who had a few remarks to make about stupidity in general and his in particular. The amphibious engagement over, the heron settled down to some quiet fishing in a hole he now had quite to himself.

SOME frequent visitors every spring, summer, and fall are the small green herons who, when seen from

PHOTO BY W. T. BRYSON

The American egret is a stately wading bird, and a very efficient angler (upper left). The great blue heron (above), looking a bit ruffled in a spring breeze, also is a competent fisherman whose very existence depends on his skills. Less frequently seen, but just as skilled as his larger cousins, is the little green heron (below).

the rear in silhouette, seem to resemble tenpins but when seen in profile with necks extended have gawky, touseled aspects. They too confine their fishing to the shallows near the shore. We can frequently spot one on a late summer afternoon standing motionless and hunched on the bank with its neck completely withdrawn, scrutinizing the water with the near-sighted intensity of a Scrooge examining the account book of some hapless clerk. The only indication of its tension is the continual twitching of its stubby little tail.

The green heron, like the egret and the great blue heron, can strike like lightning and woe betide the fish or reptile that gets too close. On one occasion we watched as a green heron on the bank struck and captured a small water snake. Some protracted pecking was necessary before the snake quieted down, whereupon the heron, with the blase nonchalance of a veteran spaghetti eater, proceeded to ingest it head first. The snake went down as slick as a whistle except for the tail which gave a valedictory wriggle before it too vanished from our sight. With the snake safely in its crop the heron shook its head from side to side and shuddered like an old sot who had just swallowed his morning shot of rotgut. The spasm over, it flew off to digest what it had consumed. Hopefully, the digestive process was over quickly. It must be rather disquieting to have one's dinner thrashing about down inside.

Kingfishers, those scruffy, devil-may-care divers, are the one species that visit and fish the pond on a year round basis. At any time between sunrise and sunset, winter or summer, you may hear one rattling its ratchet from the mimosa tree at the pond side or see it land on a pasture gatepost near the water. For the most part, it prefers to make its dive from a considerable height and a stable perch, although I have seen one hover in one spot in mid-air for as long as five seconds before beginning its descent.

Like the osprey, it hurls itself bodily into the water to make a catch, but unlike the osprey, it has no talons to use and has to rely on a beak that is of formidable proportions when compared to the size

NATIONAL WILDLIFE FEDERATION

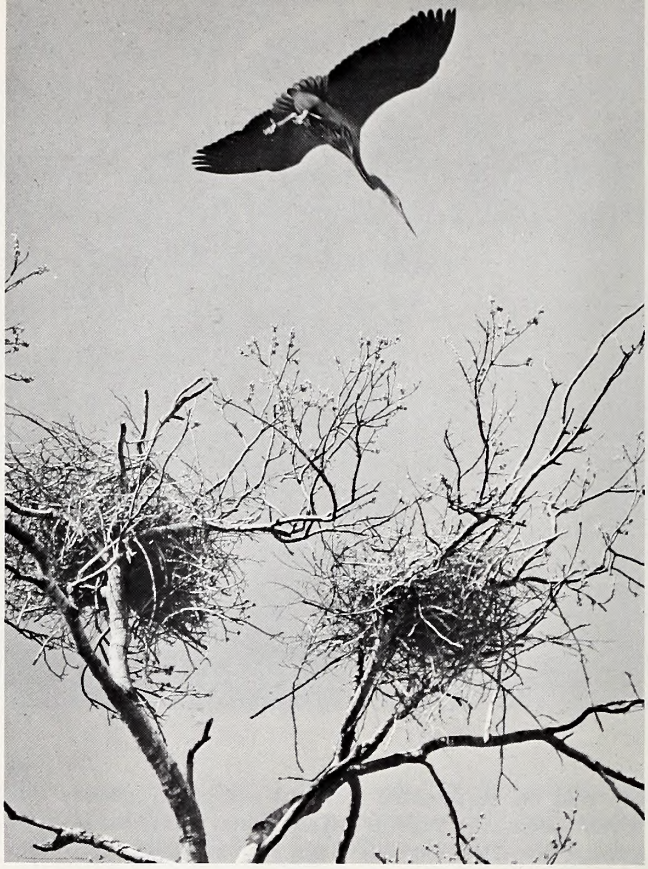


PHOTO BY JIM LEE

Where there is water with fish in it, there the kingfisher is also. A bit on the noisy side, he is a delight to watch as he dives with abandon, snatching small fish with its sharp, strong beak. Nesting is in cavities along the stream banks. The blue heron, however, selects coastal trees for nest construction (right).

of the bird itself. Despite what would appear to be a rather cumbersome piece of equipment, however, the kingfisher is well named and an extremely competent fisherman. All this awkward diving and clumsy thrashing about in the water usually culminates in a completed catch and a bedraggled, sodden kingfisher, fish in beak, flying off to a suitable perch where it can prepare its dinner properly.

A kingfisher does not swallow a fish immediately after catching it, as the herons do. Rather, it prefers to have its prey dead and limber, and to achieve this it flies to the near pasture gate by the pond and proceeds to whomp the fish on the top rail with great vigor and persistence until it reaches a satisfactory state of quiescence and flaccidity. That done, the fish is turned head-first and goozled in a flash. It was not until I witnessed this operation that I realized why the top rail of the gate always had a generous dressing of blood and fish scales on it.

Ponds in this area seldom freeze over, but when they do it is bound to create problems for water birds. We often wondered how the kingfishers, for instance, survived a week or two of frozen conditions but the question was answered one bitter January day when my wife, out tramping the road, spied one perched and rattling in a tall tree near a ditch. Suddenly, from that great height, it dove into the shallow trickle of a spring-fed rivulet and came up with something to help tide it over till better times. Apparently, if there is moving water with life in it, a kingfisher will survive, come frost or freeze

THERE are other birds that fish our pond from time to time, but their fishing activities are less spectacular and flamboyant than those of the ospreys, herons, and kingfishers because they are conducted, for the most part, under water. Besides, these birds come with no regularity at all, and seem to show up at our watery motel only when benighted or blown off course during migration. Then they will stay a day or two to recuperate before continuing their long journey to wherever. And so, after a stormy night, it is not unusual to find a common merganser or two, a pair of buffleheads, or a pied-billed grebe swimming about on the pond and diving for a small bluegill or bass.

Of the three, we have found the grebe the most interesting. It is not nicknamed "water witch" or "hell-diver" for nothing. When startled it can, in an instant, submerge until nothing is visible above the surface but its head, poking up like a little periscope and snorkel as the bird continues its cruise. It may be stretching things a little, but I have been told by hunters that the grebe, when fired upon, will always manage to submerge before the shotgun pellets hit the water near it. They contend that the bird senses the pressure waves preceding the shot and reacts instantaneously, but I am inclined to think that it is startled by the explosion. However that may be, it is certain that it does rely on submersion for safety rather than clumsy flight or swimming and there are always grebes around to prove the effectiveness of this stratagem.

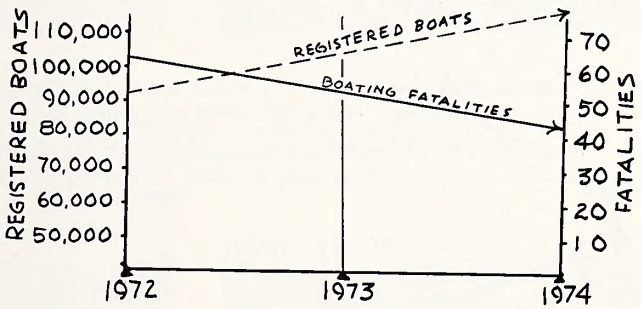
And so they come and go, these airborne fishers, lending the elements of variety and enchantment to our daily lives while keeping their vital place in the scheme of things.

But wait! The green heron is back under the mimosa tree again. I wonder what it will catch this time. ◆

Stern to Stern

BY ED JENKINS

A dunking at best, drowning at worst, is in the offing for the angler who stands up in a small boat. Even in larger craft it is risky. The trend of more registered boats but fewer fatalities (below) may indicate more careful boaters.



As the boat swung around on the anchor into the light breeze, the rippling water lapped softly on the flat aluminum bottom under the bow. Two light colored bream at the end of a fish stringer trailing behind the boat were all the man had to show for two hours of fishing.

The man's mind was not on the fish held captive by the nylon cord or his last cast that was noticeably short of a moss covered log visible just under the water. He was thinking of the fence around his house that needed painting and how if he stopped fishing in the next few minutes, he could pick up the paint on the way home and have the fence painted that afternoon.

The small spinner at the end of his fishing line broke the surface a few inches from the boat and clanked loudly against the side of the aluminum boat startling the man for a moment. "Might as well pull up the anchor and call it quits" thought the angler as he put his rod down in the boat and began to move towards the anchor line in the bow.

The small boat moved forward as the man pulled hand over hand on the wet polypropylene anchor line. Then the line was straight up and down, and as he strained against the line, being careful not to let it slip in his hands and risk a painful rope burn, he felt the anchor 12 feet below give in the soft bottom. Standing in the bow with his arms outstretched to keep the anchor from banging against the bottom or side of the boat, he dipped the small Danforth anchor up and down in the water to wash away some mud stuck on the flukes. He didn't notice the boat drifting toward the submerged log at which he had aimed his last cast a few minutes earlier. As the lower unit of the outboard motor struck the log, the boat shuddered to a halt with a resounding thump. The man knew he was falling and tried to fight back the sudden fear as he momentarily felt his hand and arm going beneath the water.

The paint on the fence, cracked and beginning to peel, was of no consequence as the woman stared blankly out of the window. It was 4 P.M. and the uneasy tension she felt was interrupted by the ringing of the telephone. She felt a chill go up her spine as she picked up the receiver. The word seemed to jump from her mouth before the mouthpiece was in front of her dry lips, "Hello?"

The voice at the other end said, "Mrs. Brown?"

"Yes," the woman answered as she brought her trembling hand to the side of her face.

"Mrs. Brown, this is the Sheriff's Department — I'm sorry to inform you . . ."

Boating accidents claimed 41 lives in North Carolina during 1974. Over one-third of these deaths were due to falls overboard.

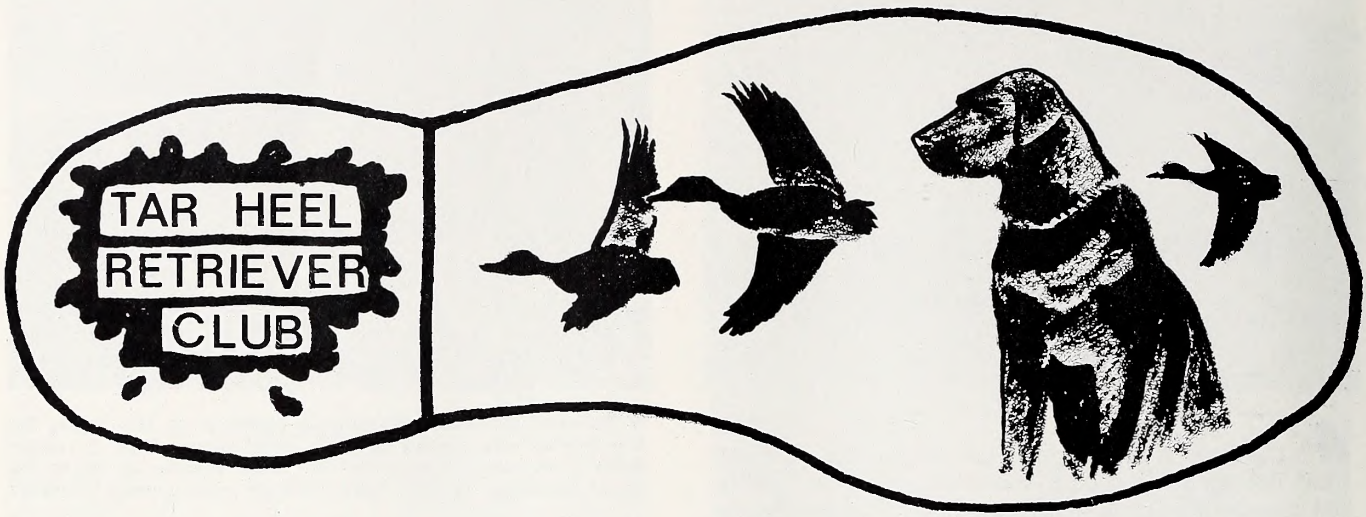
The Wildlife Resources Commission has introduced several new boating safety education programs aimed specifically at reducing the number of deaths caused by falls overboard. One of these programs was the production of a 30-second television spot which was sent to every television station in this state and out-of-state stations that broadcast into North Carolina. The public service spot, designed to make boaters aware of the danger of falling overboard, stressed the importance of not standing in a small boat and keeping a lifesaving device close at hand.

Boating safety posters pointing out five main causes of boating accidents will be distributed this spring to marinas and places where boaters frequent. The eye-catching posters will warn boat operators of dangerous practices that frequently cause boating accidents.

A boating course designed to teach young people the fundamentals of safe boat operation was offered by the Wildlife Commission to school systems in areas that had a high incidence of boating accidents. These areas were located from studies of boating accident reports received over the past several years. By the beginning of this summer, approximately 50,000 youngsters will have completed the course.

Studies of boating accidents play an important role in the development and evaluation of boating safety programs. An analysis of boating accidents occurring in North Carolina during 1974 reveals the statistics listed on page 27.

• **continued on page 27**



by C. F. Raymer, Jr.
Wilmington
Photos by the Author

THE alarm went off and I rolled out of bed. Shuffling to the shower and still half asleep stumbled to the motel breakfast of ham and eggs. We jumped into the pickup and were off. Bleary eyed and half an hour later we rolled up to the lodge. The wind was brisk and a heavy, cold mist hung on the cypress lake a few yards from the lodge. I put on a parka and dropped the truck tailgate to "air out" the dogs. People talked quietly. Shotgun actions clicked. A mallard hen quacked. Duck hunt? No; we were at the William Johnston farm near Weldon, N. C. for a retriever field trail.

The N. C. Wildlife Resources Commission printed *Hunting in North Carolina*. The booklet is free with the purchase of a North Carolina hunting license. A sentence from this booklet has promoted this article: "In recent years retriever trials have also come into the limelight."

The purpose of a retriever trial is to determine the relative merits of purebred retrievers in the field, thus tests are laid out to simulate as nearly as possible the conditions met in an ordinary day's hunt. The dogs are tested on both land and water, on marked and blind retrieves.

The function of the retriever is to seek "fallen" game and to retrieve any type of game bird. He should retrieve and deliver gently to hand. Marking is essential and a dog that marks the fallen bird well, uses the wind, follows a cripple and takes direction from his handler, is of the greatest value with our present and future small bag limits.

Dogs are judged for attention, control, steadiness, nose, delivery, and style. The handler of the dog is also under judgement and must not kick, strike, or in any manner abuse his dog.

The American Kennel Club prints a book of field trial rules and standard procedures. The *Standard* is used by all field trial sponsoring clubs. It can be ordered at no charge from: A.K.C. located at 51 Madison Avenue, New York, New York 10010. If you have looked at the pedigree on your duck dog and wondered at the abbreviations (FC, AFC, NFC, NAFC) prefixing some of his parentage, it was gained through field trials. This book will explain in detail how such titles are earned.

The Piedmont Triangle Retriever Club was formed in the mid 1960's in the Durham, N. C. area. The East Carolina Retriever Club was formed in the Kinston, N. C. area around the same time. Neither club had a historian, so dates, functions, and names have to be dervived from sketchy conversations between running of dogs and during some fine tailgate picnics at the trials. The clubs were formed by duck hunters and retriever enthusiasts intent on brushing up their dogs for hunting season. The realization that a good retriever can do more than just go out and pick up a duck that one shoots over decoys started the two clubs snowballing.

Early trials were informal training sessions but as membership grew, along with the expertise of dog work, the mechanics of the trials became more efficient. The two clubs held separately and successfully many weekend trials and both completed A.K.C. sanctioned trials.

The late summer of 1973 was quite an asset to retriever field trials in North Carolina. The board of the PTRC and the ECRC put their heads together and merged into what is now the Tarheel Retriever Club.

The Tarheel Retriever Club, since its conception, has held training clinics, gun dog stakes, informal picnic trials, and judges' clinics. In November 1974 it held its first A.K.C. Licensed Retriever Trial. A licensed trial in such short time is quite an accomplishment. Most clubs take five or more years before they can qualify.

The THRC holds informal field trials once a month, except during duck season. (Guess why?) Entry fees are nominal and depend on the stake entered. Spectators are welcome at no charge. Trial sites are flexible and have been in Durham, Greenville, Kinston, Pinehurst, Raleigh, Weldon and Wilmington. Thus one has been accessible to most areas of North Carolina with a short drive. Come on out; you are welcome.

Field trialing is a lot of fun. The Tarheel Retriever Club will give your dog the opportunity to get plenty of work all year long,

The title drawing (opposite page) is the newly adopted emblem of the Tarheel Retriever Club. Tired, not bored, these two competitors (above) rest after a hard day "at the office." At right, above, AFS-FC "Red" retrieves a mallard for owner Bill Erwin of Durham. In a warmer time, Steve Simon gives old war horse "Zak," a line. And the result of it all is a good day on the marsh (below).

not just during our short open hunting season. Your retriever will probably work on more pheasants and mallards at a field trial than he will even see during a North Carolina hunting season.

At one time, not so very long ago, it was the wealthiest families with professionally trained dogs who were active in the sport of field trials. Times have changed. Our membership comes from all walks of life: we have automobile dealers, welders, doctors, mailmen, students, lawyers, and those wonderful ladies. The women are very knowledgeable and make tough competitors. You'll meet some wonderful people. It's always gratifying to be with other people who have a common interest. You will learn a lot and fast, about handling and training your retriever. Retriever people are terrible know-it-alls; everyone has his own theories which he will express at the toss of a decoy or the drop of a leash.

A well-trained retriever will help conserve game and thus will not only be a wonderful hunting companion, he will be a strong tool in your conservation endeavors. Many times I have heard "A good hunting dog, but not trained." That means the dog is hunting by its instincts. He is not taking directions from you, and can ruin some good shooting, can cost you lost birds, and maybe a valued friendship.

If you are interested in attending or would like to join the Tarheel Retriever Club, we would be happy to welcome you as a member. Write: Tarheel Retriever Club, P.O. Box 22, Wilmington, N. C. 28401. Annual dues for instate members are $10.00 and you would be put on our regular mailing list and would receive our newsletters with all information about club activities and trials. I would like to emphasize that the majority of the members of our club are duck hunters and are interested in training gun dogs. The field trial enthusiasts represent only 25 percent of our club membership.

Retriever field trials were started in America at the turn of this century by a group of duck hunters out for a fun afternoon of: "My dog is better than your dog." Another group of waterfowlers started Ducks Unlimited, Inc. in 1937. Their farsighted idea sent $3,000,000 to Canada in 1973 for their waterfowl habitat preservation program. That is quite an egg bill and you should reap some of their harvest! Ducks and retrievers, I believe, should be synonymous. Support Ducks Unlimited so that we will continue to have waterfowl to retrieve.

Attracting and Maintaining a Purple Martin Colony

by
Joshua A. Lee
and
David S. deCalesta
North Carolina State University

IN the last two decades there has been increased interest in feeding and providing nesting sites for song birds. One species that is especially suited to nesting in close proximity to man is the purple martin.

Description

Martins are slender, graceful fliers with long, narrow wings and a long, forked tail. Length from beak to tail is about eight inches. Adult males are a uniform glossy steel-blue; females are a much duller blue with white chin, throat, chest, sides and flank.

Nesting

Martins nest in all counties of North Carolina. Beyond our borders they nest as far south as the West Indies, north into southern Canada and westward to the Pacific coast. Martins prefer open areas for nesting. Strong of flight, they approach and leave nesting areas at high speeds in a direct line.

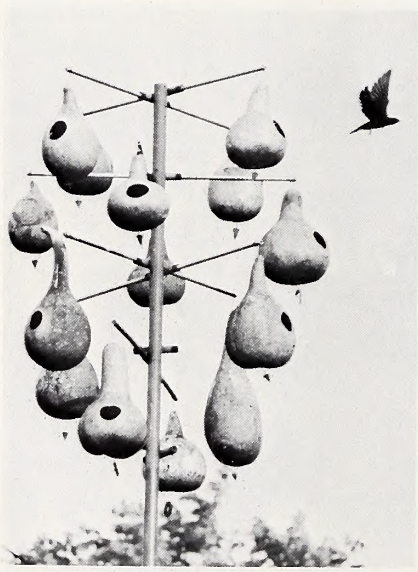
Martins are extremely social birds, especially during the breeding season when they nest in communal groups of up to 12 pairs. Preferred natural nest sites include woodpecker holes in tall, dead trees and crevices in cliffs. In eastern United States the martin is largely domesticated, using man-made housing such as elaborate apartment-type houses or hollowed-out gourds hung in groups from poles. In North Carolina martins nest in both types of housing.

Use of Gourds

Martin use of gourds dates back to pre-Columbian times when American Indians enticed martins from wild nesting sites to gourds.

Gourds for martins should have a well-developed shell seven to eight inches in diameter and at least six inches deep. A hole two inches in diameter should be cut in the side of the gourd two inches from the bottom of the gourd. Two ¼-inch holes should be drilled in the bottom of the gourd for drainage. A weight should be suspended from drainage holes to steady the gourd during high winds. Triangular lead weights sold in fishing equipment stores are ideal.

Gourds should be suspended from cross arms attached to a pole at a height of at least 15 feet from the ground. No more than one gourd should be placed on an arm, since a pair of birds usually includes the arm in its defended territory. Entry holes of gourds should face away from the pole so that parents have easy access to this opening when feeding the young.



One gourd to the "arm" seems to work best. A greased metal pole usually foils predators.

For a new martin colony about eight to 12 gourds suffice. If you are successful in establishing a colony, you may increase the number of gourds as the colony grows, but 12 should be a maximum. Let neighbors have the excess birds to start their colonies.

Use of Houses

Houses are commonly used outside of as well as in parts of the South. Martins in the Raleigh area prefer gourds and will not go to houses if gourds are available. This preference may be changed, however, for martins in the "gourd belts" can be induced to use houses. The typical house is made of aluminum or wood; some are quite elaborate. As with gourds, one should strive for no more than 12 pairs of martins. Huge, elaborate houses are almost never filled and thus offer tempting housing for starlings and sparrows. If the available space is modest, martins will occupy the housing and do a much better job of fending off nesting competitors. A house should be placed on a pole at least 15 feet above the ground.

Whether you use gourds or houses, the housing should be taken down in fall after the martins depart, cleaned, and stored in a dry place. This preserves the houses or gourds and removal of old nesting materials rids the compartments of mites and other parasites. A recommended insecticide might be used before storage. However, martins are remarkably free of nest parasites if sparrows and starlings are kept away from the colony. Another reason for storing the house is that this prevents its use as a roost for sparrows during winter.

One can attract gourd-oriented martins to houses by hanging a few gourds beneath the house the first year. If the gourds are occupied and broods are reared in them, suspend an equal number of gourds the second year. Surplus birds may nest in the house. After two or three years the gourds may be removed.

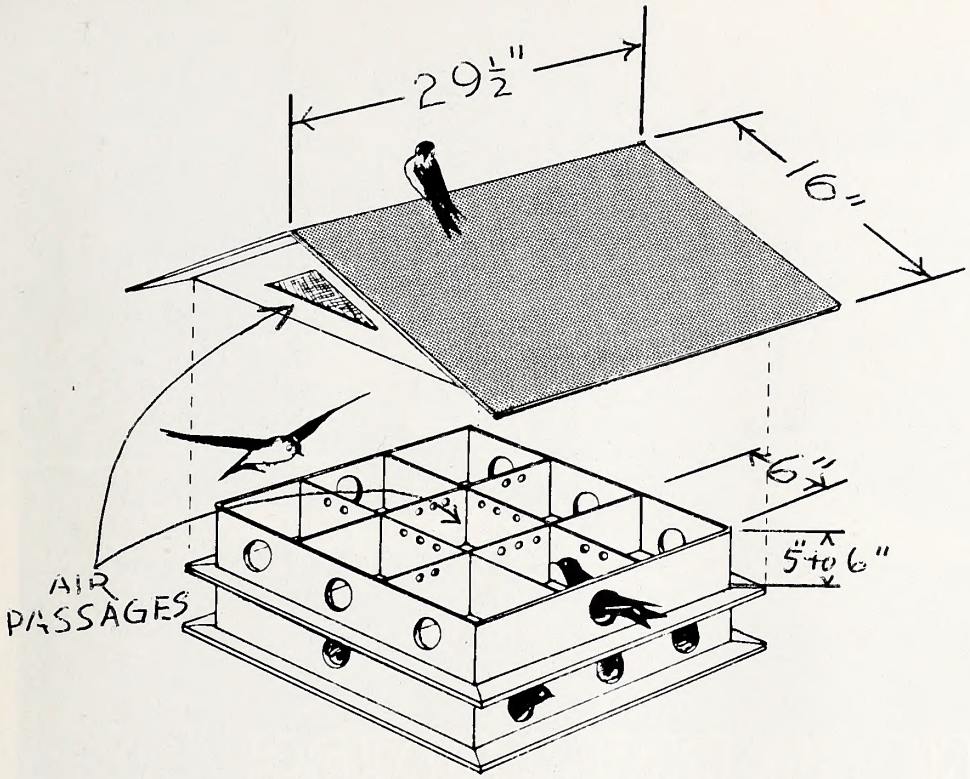
Locating the House

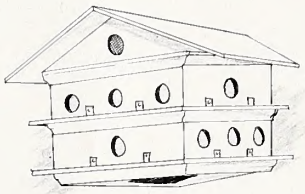
Martins prefer to nest in open areas. This choice seems to be related to the fact that they orient to their environment by visual cues and locate the nest site from afar. Also, the possiblity of predation might discourage martins from nesting near trees or tall shrubs.

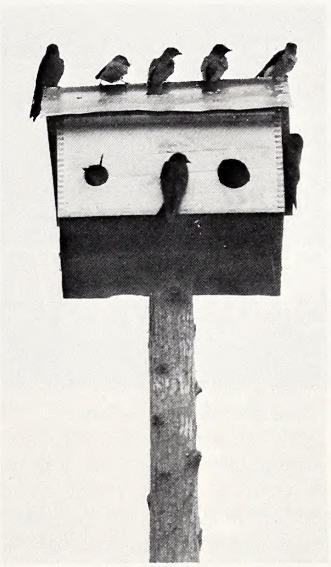
One way to provide open space around the house is to elevate it above the tree canopy.

Nest Site Problems

Adult martins have few enemies and survival of adults during nesting is high. Bad weather is the greatest enemy of martins. Most







Martin houses come in several shapes and sizes, but one that seems to work well is shown above. Provide plenty of ventilation to keep the house as cool as possible during summer. Utility rather than beauty is the key; just ask these martins at right.

Whether you use gourds or houses, if you follow these helpful hints, you should be able to establish a martin colony in your area. If you missed this spring, try it next year, early.

young that die in the nest succumb to starvation and exposure during prolonged spells of cloudy, cool weather. If the young die, quickly remove them from the nests. Most pairs will renest if you assist them in this way. Some pairs remove the dead young themselves, but others merely abandon the nest and do not attempt to renest unless the young are removed for them. Second attempts generally are not as successful in terms of number of young reared as first attempts.

Cats can be a serious threat. Measures may be taken to curb cat predation during April when martins, especially the young, are most vulnerable. A metal pole discourages cats from climbing. Wooden poles might be sheathed with sheet iron. If the latter course is taken, extend the sheathing at least seven feet up the pole. The black rat snake is another predator. A metal pole will usually repel this and other snakes but the pole should be kept well polished or even greased. Do not kill the snake if it invades your colony. Take it a few miles away and release it and it will continue to eat rats and mice and other pests.

Starlings and sparrows compete with martins for nest sites. Neither species is protected in North Carolina so it is legal to dispose of these birds. Starlings apparently nest in gourds only if the gourds are tied down so they can't sway in the wind. Sparrows nest in any site as long as it is at least 10 feet above the ground.

Adult martins arrive in North Carolina as early as the first week in March, but it is rare for new colonies to have any birds before May. However, it is probably best to put the house or gourds up in March just in case some two-year-old birds that did not breed the year before are looking for a home. A new house is vulnerable to sparrow or starling infestation, so extra precautions should be taken to exclude these pests.

The first year may see but one to four pairs breeding in a new colony. If so, surplus gourds should be removed after the birds settle down, or if a house is being used, the doors of extra compartments should be blocked to exclude pest birds.

If martins using your colony the first year are sub-adults, breeding success might not be particularly high but don't be discouraged. Sub-adults that nest in the colony the first year will return the next year as adults and will have better success.

Miscellaneous Tips

Gourds may be grown easily in the garden and occasionally are sold at markets and roadside stands. Select those of the right size with fully developed shells. Ceramic and plastic "gourds" are also available. Both are attractive, but the heavy ceramic gourds should not be placed on the ends of poles.

Houses of various kinds are readily available at garden shops or can be built.

Martins should not be offered bird seeds as they feed on flying insects exclusively. Martins will peck at crushed oyster shells, and these may be scattered on the roof of the house or placed on a wide tray above ground. ▲▼

CROATAN GAME LANDS

GREAT LAKE RYE FIELDS FOR DEER

by Grady Barnes
Photos by Ken Harrison
U.S. Forest Service

IF our often-used state slogan of "Variety Vacation Land" was changed to "Variety Huntland," it would adequately describe the 167,569 acre Croatan Game Lands. Vegetation varies from hardwood swamps with towering cypress, to land the Indians very adequately described as Pocosin, meaning swamp on a hill. Hunting opportunities not only include small game and deer, but also less frequent species such as bear and wild turkey. Waterfowl and woodcock are abundant in those areas that meet the specific habitat requirements of these birds.

The bulk of the Croatan area comprises land managed by the U.S. Forest Service, known as the Croatan National Forest. In addition to the Croatan National Forest, hunting rights on intermingled land owned by Weyerhaeuser Company and International Paper Company are leased and managed for wildlife. Wildlife management is accomplished on the Forest Service land by three methods: Forest Service personnel using Federal funds, Forest Service personnel through cooperative funds that come from the sale of the game lands use permits or wildlife mobile crews employed by the Wildlife Resources Commission funded by money derived from the game lands use permit.

Management and development on Weyerhaeuser and International land is done by planning timber prescriptions to benefit wildlife or by special development accomplished by the wildlife mobile crews. This all adds up to a wide variety of management techniques employed by the Commission and its cooperators and results in an abundant harvest of a variety of game species.

Waterfowl

Waterfowl management and development on Croatan consists of a drawdown schedule for Great Lake, a 3,000 acre lake, and development of a 25-acre green tree reservoir. In addition, hunting for waterfowl on Catfish Lake and several streams is productive at times, depending on the duck population and weather.

A drainage canal was constructed into Great Lake, control gates were installed and the area managed as a drawndown pond. Different seeding techniques were established in order to determine an adequate process to maintain waterfowl foods in the area. However, since the rewatering of the lake was dependent upon rainfall, the practice has not always been successful; therefore, during dry falls the water level could not be maintained at a desirable level. Now waterfowl management is geared toward a minimum drawdown and the establishment of food by transplanting wild rice from nearby White Oak River. Also, wild millet seed was gathered from Lake Mattamuskeet and transplanted to Great Lake. Hunting on Great Lake ranges from "a pure conservationist" (not a shot fired), to good hunting depending on weather conditions and abundance of waterfowl.

The green tree reservoir is a bottomland area that is flooded each fall for waterfowl. Hunting consists mostly of wood ducks during the early morning flight. Float hunting, an ever increasing sport for waterfowl, is good on local streams in the area. White Oak River, Hunter Creek, and Brice's Creek are probably the best float streams.

Future waterfowl development work will consist of more green tree reservoirs impounding additional hardwood bottomland.

Deer

Deer are present throughout all of the Croatan

Key areas are planted with a variety of food and cover plants such as this common lespedeza, for small game.

Game Lands with populations ranging from moderate to high. Each year some trophy-size deer are taken from the deep pocosin areas by hearty hunters who are willing to tackle the dense underbrush. Management for deer on the area consists of establishment and seeding of winter rye on many small fields. Approximately 100 acres of rye were seeded on the area during the past season. Several miles of hunting lanes are maintained in the pocosin vegetation that provide hunter access and deer browse. Controlled burning is conducted on a two- to three-year rotation and is probably one of the best food-providing techniques for deer.

In cooperation with the U.S. Forest Service, timber management practices are geared to provide better deer management. These practices consist of small clear-cut areas that provide excellent browse food in stands that are being managed for pine timber production. Many areas that were in pine timber have been converted to hardwood timber primarily for wildlife. Both still hunting and dog-deer hunting are productive on the Croatan area.

Bear

Part of the Croatan Game Land is set aside as a bear sanctuary and serves as a restoration area to help populate the surrounding game lands. On the open section of the game lands a huntable population of bear is present and several are baggged each year.

Mast-producing trees such as this chestnut, are encouraged by keeping competing vegetation around them mowed the first few years.

Management techniques practiced for bear production consist of controlled burning to encourage the growth of food plants such as gall berry, and leaving islands of black gum trees adjacent to streams for fruit production. Our food habit studies from the eastern section of the state indicated that black gum and gall berries are two of the chief foods of bears especially in years of low acorn production. Small fields of corn have been planted for bear food in sections of the sanctuary; however, depredation by deer during the first two weeks of growth prevents corn planting in most sections.

Turkeys

Turkey management on the Croatan Game Lands holds a promising future. In decades past, the Croatan area had a moderate turkey population, but due to destruction of habitat and overhunting by illegal methods, the turkey population declined to scattered birds in two locations on the area. The Croatan area was evaluated and certain sections designated as turkey areas. In these areas concentrated efforts are being expended on turkey management.

One of the limiting factors for a turkey population is brood habitat, which is a place for the old hen to take her poults to feed on insects, their chief food. Small clearings ranging from one to four acres are cleared and seeded to a permanent grass and clover mixture for turkeys. Eleven such openings were cleared and seeded this past year and some 35 additional fields are scheduled for future clearing and seeding.

In addition, timber production on the turkey areas is geared to benefit turkey management. About 1,000 autumn olive trees have been set out near or adjacent to the turkey opening to supplement the turkeys winter diet. Those sections on the Croatan Forest that were evaluated as potential turkey range with no turkeys present are being stocked with wild turkeys trapped from Camp Lejeune Marine Base. Most of this stocking has now been completed. The Croatan area is opened to turkey hunting under the statewide spring gobbler hunting season and about five trophy birds were bagged during the 1973 season. With the present management plans and restocking, the Croatan should be a noted turkey hunting area in the future.

Small Game

Small game on the Croatan is managed under a "key area" concept, old fields and farms once located on the area, when released from farming activities, are seeded to a variety of food and cover plants. Several thousand VA-70 seedlings have been planted for quail, many more acres seeded to sericea lespedeza, common lespedeza, partridge pea, and other wildlife foods. Last year 29 acres were seeded in a variety of millet for dove management. About 15 acres of the total resulted in excellent dove hunting. Good woodcock hunting is found along the stream bottoms on the Croatan area, although, only moderate utilization by hunters has been noted.

In addition to the huntable species previously mentioned, our latest addition to the game animal list, the bobcat or wildcat, is present on the Croatan in huntable numbers. Raccoon hunting is also enjoyed by those hearty souls who can fight the thick eastern undergrowth.

All this adds up to truly a "Variety Huntland" for the sportsmen of the "Variety Vacation Land." ◆

The eighth annual North Carolina Governor's Frog Jump, sponsored by Theta Chi fraternity, will be held on April 26, 1975. The annual green leap is sponsored by the Delta Rho Chapter of Theta Chi Fraternity at North Carolina State University in Raleigh with the cooperation of the Governor's Office. The frog jump will be held at the Dorton Arena (North Carolina State Fairgrounds) in Raleigh, with the contest beginning at one o'clock p.m. Registration from 12:30 to 1:00 p.m.

Frog jumping goes back 3,000 years to the story surrounding an Athenian and a Boetian who met and wagered on the jumping abilities of their respective frogs. Mark Twain's story, "The Celebrated Jumping Frog of Calaveras County is the basis for the present National Frog Jump, held in the spring of each year in Calaveras County, California.

The Governor's contest is open to anyone in N. C. Each contestant may enter two frogs, each must be a mimimum of four inches long.

The frog that covers the greatest distance in a series of three jumps will be declared the winner. The victorious frog in the state competition will be honored with the Governor's Cup and will be eligible to compete in the National Frog Jump later in May of this year.

Theta Chi's Steve Waddell and Ron Cook, prepare a hopper for the N. C. Governor's Frog Jump April 26.

Clarification

Dear Sir:

Since I provided much of the information in Howard Muse's article on the Red-cockaded Woodpecker (February 1975), I thought that I should clarify one portion of it. The first paragraph on page 27 should read:

"The main thing is to burn and clear the understory. The dense understory automatically excludes longleaf pine from regenerating itself. The pines have to have sun and exposed soil to regenerate. If the forest is allowed to continue the present course, the entire forest will become an oak-hickory forest. It will happen to all of this area sooner or later. Within a hundred years the pines will start to die out. You would leave the larger oaks for mast production. In a natural pine forest, where fire plays a vital role, only scattered oaks survive the fires. When fire is excluded, the scrub oaks form a very dense understory, grow very slowly, and produce little mast. Under such circumstances, even catastrophic fires are better than no fires at all," concludes Carter as we walk through a mixed pine-hardwood stand.

J. H. Carter III
Southern Pines

Record Raccoon?

Tim Sappenfield, 3632 Beulah Church Road, Matthews, N. C. 28105 is interested in "the largest raccoon both in length and weight, in North Carolina." Sometime ago he told us of a pet raccoon of his which was 32½ inches long, and weighed 30 pounds. If you know of a larger one, please let Tim know.

FISHING from page 7

difficult, and you'll get more rod for the money.

The next item to consider is the line. Your choice of flyline is very important since it is the weight of the line, not the fly, that permits you to cast. Not even the finest flyrod will cast properly if your line doesn't match it. Most rodmakers now put a decal on the rod suggesting the proper weight line to use. Follow this carefully and you won't run into any trouble. If your rod calls for a No. 6 line, don't get anything else.

Weight forward or double taper flylines are expensive (ranging up to about $16). Such lines are nice and they cast delicately, but they aren't a necessity for panfishing. A good level flyline will work fine and should cost about $3 to $5. Again, it's a good idea to buy recognized brand names.

Of course, you'll need a reel to hold your line. Although I prefer a single action (manual) fly reel, I am quick to admit that an automatic reel has some advantages when fishing for panfish from a boat. An automatic picks up excess line quickly and helps prevent tangles. On the other hand, single action reels have better drags (though you probably won't need it for panfish). In either case, expect to spend about $15 for a good one. You might find a serviceable single action reel for less.

You'll need some leader material (monofilament) to provide an invisible link between the end of your flyline and your fly. You can buy special tapered leaders, but you don't need them. Six to eight feet of level six- to 10-pound test monofilament will work fine.

Finally, you'll need a selection of bugs or flies. Small cork bodied or sponge rubber floating bugs with white rubber legs are tops when bluegills or other panfish are feeding on the surface. My favorite colors are white, yellow, and black.

You should also get some slow sinking flies since

they often work better than floating bugs. My favorites include the hard-bodied black ants (size 10) and chenille "bees" with white rubber legs.

By the way, if you don't trust your judgement to assemble a balanced fly fishing outfit, you might consider buying one of the pre-assembled outfits (rod, reel and line) offered by such companies as Cortland, Martin, Orvis, Scientific Anglers and others. Orvis and Scientific Anglers are among the very best available at any price, but may cost more than you want to pay for your first outfit. The Cortland and Martin "matched" outfits are also excellent, and are available at very reasonable prices.

A few words on fishing techniques might be in order. Once you've located a bed of spawning bluegills, anchor quietly about 30 feet away and carefully cast your popper or fly into the bed. Most experts don't "twitch" floating panfish bugs much. They just let them lie there until something gobbles them up and that usually doesn't take very long.

With sinking flies, it's often a good idea to retrieve them very slowly to keep them from getting fouled on the bottom. You can detect a strike on a sinking fly by keeping a watch on the end of your flyline. When the flyline twitches, set the hook.

It will take a little practice, but you'll never be sorry, and that's a promise. ⬍

NEAR TRAGEDY from page 8

added to the excitement as Cal and I took turns paddling his smaller boat through some of the bumpy spots on the Neuse. Karen was a little less daring, so she sat in the sun on the bank and watched, and dried out a little more.

Even, or maybe especially, with our being dumped in the river, we all thoroughly enjoyed that Sunday on the Neuse. We left exhausted, but happy, and with a renewed respect for the power of the Neuse and any other body of water.

I've always enjoyed it, and now I respect it even more. And I certainly plan to continue to take advantage of all the Neuse River has to offer. ⬍

LEARNING from page 12

are given in cooperation with a local organization, school group, community college, or the North Carolina Museum of Natural History. Most of the programs cost about the same as a good movie —about $1.50 per hour of instruction (or entertainment!) per person. If you would like to participate in any of the Botanical Garden's courses or workshops for this spring (see box) or if you would like to have a particular program on native plants developed for your area or special group, just write the North Carolina Botanical Garden, c/o 405 Coker Hall, Chapel Hill, N. C. 27514. ⬍

	1974	*1973*	*1972*
Reported Boating Accidents	141	142	160
Boating Fatalities	41	54	61
Reported Property Damage	$280,224	$192,691	$300,435

Causes of Fatal Accidents	
Capsizings	14
Collisions	5
Falls Overboard	14
Fires	2
Sinkings	4
Other	2

Boat Operator's Age	
(10-19)	0
(20-29)	11
(30-39)	10
(40-49)	4
(50-59)	3
(60-69)	5
(70-79)	1
Unknown	2

Fatal Boating Accidents *Month*	
Jan.	0
Feb.	1
Mar.	4
April	6
May	5
June	4
July	4
Aug.	2
Sept.	5
Oct.	1
Nov.	1
Dec.	5

Time	
Morning	10
Afternoon	8
Evening	6
Night	7

Day	
Saturday	11
Sunday	6
Monday	2
Tuesday	3
Wednesday	4
Thursday	1
Friday	9

STEM TO STERN **from page 19**

The popular cover of the January, 1975 issue of WILDLIFE has been reprinted on quality paper without any printing and is available at $3.00 each postpaid. This wildlife print, suitable for framing, is signed by the artist, Duane Raver. The quantity is limited. Make checks payable to Wildlife Commission, and send to Education, Wildlife Commission, 325 N. Salisbury Street, Raleigh, N. C. 27611.

Least Bittern

Photo by Darrell Louder

STATLIBR* 1SAMPLE9999 1
DIV OF STATE LIBRARY *
109 E JONES ST
RALEIGH NC 27611

LITHO BY THE GRAPHIC PRESS, INC., RALEIGH, N. C.

ER
45
39/6

Wildlife

IN NORTH CAROLINA

MAY 1975

North Carolina State Library
Raleigh

N. C.
Doc.

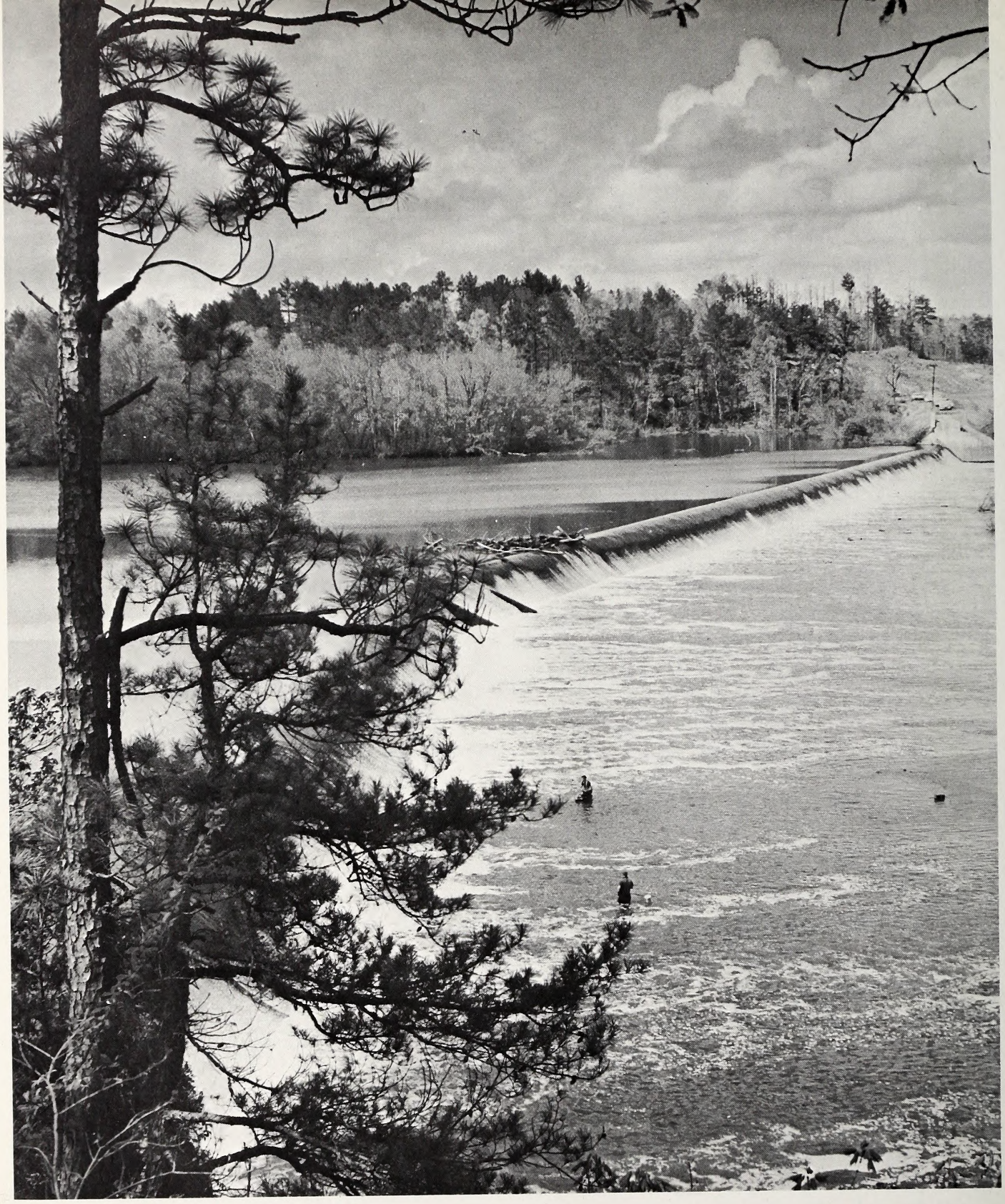


PHOTO BY LUTHER PARTIN

Fishing Time

Buckhorn Dam on the Cape Fear River near Corinth, makes a mighty inviting place to fish. Whether you tackle it by boat or by wading, use extreme care, as you should wherever you fish.

STATE OF NORTH CAROLINA

JAMES E. HOLSHOUSER, JR.
GOVERNOR

DEPARTMENT OF
NATURAL AND ECONOMIC RESOURCES
JAMES E. HARRINGTON, JR.
SECRETARY

NORTH CAROLINA
WILDLIFE RESOURCES COMMISSION

ROSCOE D. SANDLIN, CHM. – JACKSONVILLE
JAY WAGGONER, V. CHM. – – – – GRAHAM
ROY A. HUNEYCUTT, SECY. – – – – LOCUST
W. K. ANDERSON – – – – – – – NEWLAND
WALLACE E. CASE – – – – HENDERSONVILLE
D. JACK HOOKS – – – – – – – WHITEVILLE
DR. LATHAN T. MOOSE – – WINSTON-SALEM
V. E. WILSON, III – – – – – – – ROCKY MT.
ORVILLE L. WOODHOUSE – – – – – GRANDY

CLYDE P. PATTON
EXECUTIVE DIRECTOR

EUGENE E. SCHWALL ROBERT B. HAZEL
ASSISTANT EXECUTIVE DIRECTORS

DIVISION CHIEFS

REX GARY SCHMIDT – – – – – – EDUCATION
RICHARD B. HAMILTON – – – – – – – GAME
W. DONALD BAKER – – – INLAND FISHERIES
DONALD E. CURTIS – – – – – PROTECTION
CHARLES R. FULLWOOD, JR. – MOTORBOATS
AND WATER SAFETY

The Editor gratefully receives for publication news items, articles, and photographs dealing with the North Carolina out-of-doors, but reserves the right to reject materials submitted. Full credit is given for all materials published.

Have you moved recently? Change your address promptly. Either send in an old mailing label from your magazine along with new address or type or print complete old label information exactly as it appears on your magazine.

WILDLIFE IN NORTH CAROLINA is published at the Wildlife Resources Commission offices, Albemarle Building, Raleigh, N. C.

Phone Number AC 919/829-7123

* * *

Second class postage paid at Raleigh, North Carolina 27611.

* * *

SUBSCRIPTION RATE—$2.00 per year (12 issues). Add $1.00 for overseas postage except APO, Canada and U. S. possessions. Back issues —$.25 per copy plus $1.00 minimum for handling and mailing; back issues may not be available. Send check or M. O. payable to WILDLIFE RESOURCES COMMISSION. Stamps cannot be accepted. Any employee of the Wildlife Resources Commission may accept subscriptions, or send to WILDLIFE, Albemarle Building, 325 N. Salisbury Street, Raleigh, N. C. 27611.

Wildlife circulation this issue 84,670

Wildlife IN NORTH CAROLINA

The official publication of the NORTH CAROLINA WILDLIFE RESOURCES COMMISSION, Raleigh 27611. A monthly magazine devoted to the protection and restoration of our wildlife resources and to the improvement of hunting and fishing in North Carolina.

VOL. XXXIX NO. 5 MAY, 1975

IN THIS ISSUE

Rockin' on the Roanoke
by Rod Amundson ..... Page 4

Helping the Beach
by Mark Swanson ..... Page 6

Paddle Your Way
by Lawrence S. Lane ..... Page 8

The Pond in Spring
Photo Feature by W. T. Bryson ..... Page 10

Cliffs of the Neuse
by V. Charles Bruton ..... Page 12

Small Stream Fishing
Photo Feature by Jim Dean ..... Page 14

Fishing
by Jim Dean ..... Page 16

Resource-O-Gram ..... Page 17

Proper Care for the Camera
by Ferman Karriker ..... Page 18

Blue Trout
by Ed Pearce ..... Page 21

Stem to Stern
by Ed Jenkins ..... Page 22

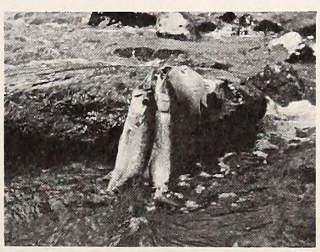
South Fork of New River
by R. L. Collins ..... Page 23

Crackshots and Backlashes
by Rod Amundson ..... Page 25

EDITORIAL STAFF

DUANE RAVER – – – – – – – – – EDITOR
LUTHER PARTIN – – WRITER-PHOTOGRAPHER
JIM DEAN – – – – WRITER-PHOTOGRAPHER
TED DOSSETT – – – WRITER-PHOTOGRAPHER
ROD AMUNDSON – – CONTRIBUTING EDITOR

An objective of all levels of government should be to achieve and sustain a balance of the social, ecological, and economic benefits derived from natural resources. Without such balance none of the factors on the scale will be worth weighing.



This string of bass, pickerel and panfish was draped over a rock in the small stream very near where they were caught by the fisherman in the background. For more on this fine fishing, see the feature on page 14, and the article on page 16. Watch your step; the rocks can be slippery and the water chilly and wet. Photo by Ted Dossett.

PHOTO BY LUTHER PARTIN

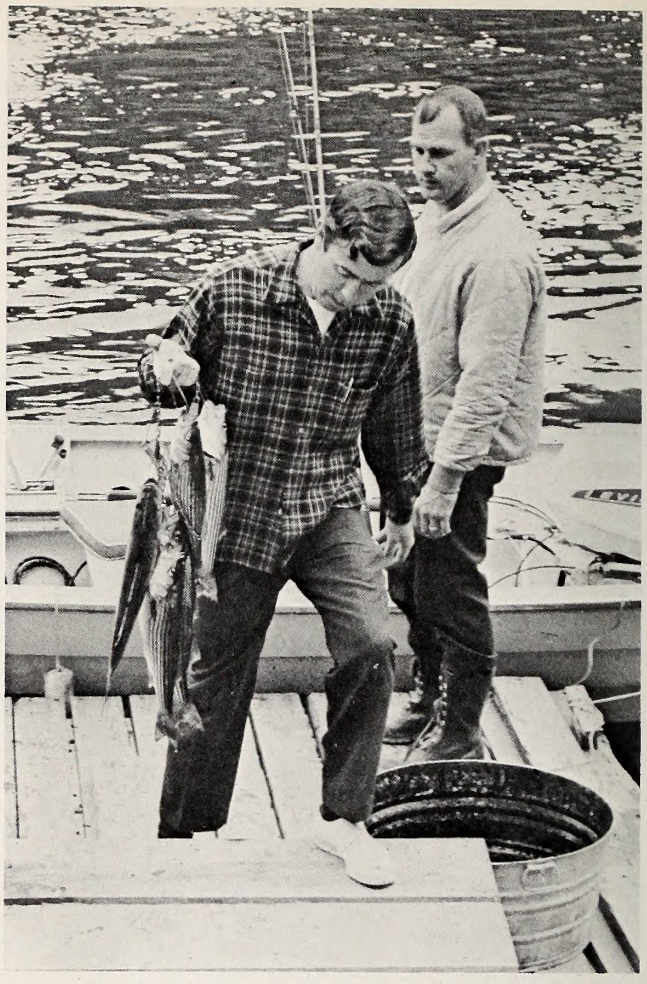


PHOTO BY TOM JACKSON

Rockin' on the Roanoke

by Rod Amundson

BIOLOGIST Richard Guier grabbed a scalpel and made a six-inch incision in the belly of a 23-pound female striped bass.

Out came more than a million eggs that were poured into a pan. Moments later milt from a male fish was mixed with the eggs, and the fertilized eggs put into hatching jars.

The scene was the site of the world's first and oldest striped bass hatchery, located on the bank of the Roanoke River at Weldon where millions of striped bass, locally called rockfish, are hatched each year during the April-May spawning run.

The Weldon Hatchery first received national fame 25 years ago when the late Phil Ellis of WPTF Radio, Raleigh, made an on-the-spot recording called "Rockin' on the Roanoke" that was used by Morgan Beatty on his NBC network news program.

Being anadromous, rockfish migrate upstream to spawn. Fast-moving water is necessary to keep the eggs suspended until they hatch some 48 hours after they are spawned. The young fish make their way downstream to estuaries and sounds where they feed and grow to maturity. Many remain in these waters as a resident population, while a few others go into the ocean where they provide an important commercial and sport fishery.

Rockfish eggs, when first spawned, are so small that 4,000 can be contained in a teaspoon. They immediately begin to swell, and within a few hours increase in size tenfold. Although adults may reach a size of 70 pounds or more, they are only about one-fourth inch long when hatched.

Most rockfish do not spawn until stream temperatures reach about 63-68 degrees; and when the spawning run begins, word spreads like wildfire, and the Roanoke becomes swarmed with fishing boats.

FISHERMEN look for what they call "rockfish fights" over the spawning grounds. These occur during the act of spawning, and some oldtimers will tell you

From eggs (far left, opposite page), to adult fish, and the striped bass provides a fascinating story. Its success depends, to a large extent, on the actions of man.

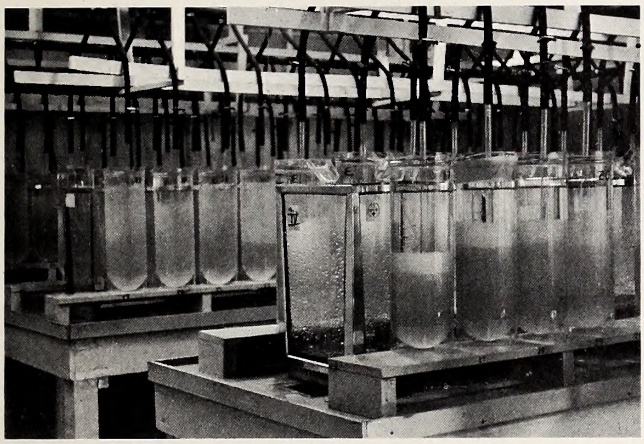


PHOTO BY LARRY BIRCHFIELD

Special hatching jars contain striped bass eggs with a constant flow of water. This scene is the interior of the Wildlife Commission's rockfish hatchery at Weldon on the Roanoke River. The River's boats will soon be tied up for another year as the spawning season comes to an end.

the males fight so furiously over females the water turns red with blood. Actually the fish are no more fighting than a pair of mating alley cats in springtime. Instead, the fish are merely in a frenzy of reproductive activity.

To keep the Weldon Hatchery supplied with eggs, the Wildlife Resources Commission pays the angler $25 per million eggs from still-alive females whose eggs are "ripe" for spawning. Females must, however, be accompanied by live males. The lucky angler gets to keep the fish, which is valued at some $.70 per pound, depending on supply and demand.

Occasionally, large females are brought in to the hatchery but are not quite ready to spawn. These are injected with a gonadotropic hormone and kept in holding tanks until they are ready to spawn. The eggs are fertilized by a male fish which also is supplied by the angler. Eggs processed in this manner generally have a lower ratio of fertility than those processed in the usual manner, and the angler is paid on the basis of the number of fry produced.

Most rockfish brought into the hatchery are caught in bow nets. Those caught with sport tackle, especially those in the 20-pound class, have been tired to exhaustion, and are less likely to be useful for egg production.

When the Weldon Hatchery was established some 80 or 90 years ago, its initial purpose was to supplement natural spawning in the Roanoke, and all fry were returned to the river. Meanwhile, the natural spawning of rockfish was diminishing in the Neuse, Tar, and Cape Fear rivers. Fry from the Weldon Hatchery were stocked in these rivers in an effort to supplement natural reproduction. Success of such stocking has yet to be demonstrated.

Other fry were shipped to California many years ago, and this transplant has resulted in an excellent West Coast sport and commercial fishery. In North Carolina, South Carolina, Virginia, and California it has been proved that the species is capable of becoming landlocked; i.e., fish that normally spend most of their lives in salt or brackish water can live and reproduce in fresh-water lakes and reservoirs—provided the habitat is suitable.

THIS knowledge led to stocking rockfish fry in several Piedmont and Mountain area reservoirs where most efforts met with failure. Subsequent stockings with fingerlings were more successful and have gained the hearty approval of local anglers. Biologists have already produced put-grow-and-take rockfish fisheries in Badin and Norman reservoirs. This technique involves stocking a given number of fingerlings in each reservoir to grow up. When these reach maturity, they supply a sport fishery.

Current research is being done to determine the optimum number of fingerlings to stock each year without damaging other game fish species by overcompetition. Under agreement between the United States and USSR governments, rockfish fry were sent to Russia in exchange for sturgeon fingerlings. The latter were placed in the National Aquarium in Washington. Last May a fishing tackle firm arranged to ship 50,000 fry to Japan. North Carolina, after receiving approval from the U.S. State Department and U.S. Fish and Wildlife Service, cooperated by supplying the fry in this gesture of international goodwill.

Several complaints have been received from rockfish anglers who ply the Roanoke when they learned that "their" fish were being stocked in other Tarheel waters, other states, and foreign countries. Actually, fish taken from the Roanoke are destined for the frying pan or the "rockfish muddle" stewpot, and if they were not brought to the hatchery the eggs would be a total loss anyway.

Much is yet to be learned about more efficient means of stocking rockfish. There is a high mortality rate among fry, but much less among fingerlings. Research will eventually bring forth a more efficient and economical way to produce a still larger number of fingerlings.

Last year the hatchery at Weldon produced 10,184,000 fry. Some were returned to the Roanoke, some to other North Carolina hatcheries to be reared to fingerling size, and still others sent to other states where they will be reared to fingerling size. Under an agreement with these states and the U.S. Fish and Wildlife Service, one-fourth of the fingerlings will be returned to North Carolina to be stocked in reservoirs. ▲▼

Helping the Beach

The battle of the beach is a never ending one, requiring the efforts of everyone who enjoys the coastal area. This beach grass brigade (lower left) led by Lee Swanson, heads for "battle." The necessary tools for planting the grass are assembled (below).

by Mark Swanson
PHOTOS BY THE AUTHOR

At some point in the past, a fear of beach erosion caused Mr. Moore and his wife Sally, to erect a "Maginot Line" of wrecked cars between the pounding surf and their beach property. The cars would act to catch sand and thus help establish protective dunes — perhaps not a beautiful solution, but an effective one. Likewise Mr. Moore's neighbor, Mr. Reeves, has, over the years, put time and money into the planting of several rows of pine trees on his property to act as some sort of wind break and soil stabilizer. Out of the thousands that have been planted, only a fraction could endure the abusive salt-spray and wind; even after ten years, the tallest trees in the rows stand only as high as the average man.

These people are taking perfectly natural steps to safeguard their property. They did nothing that could not conceivably have been done elsewhere along the North Carolina coast. Nevertheless, their position makes them unique, as does their task. Mr. and Mrs. Moore are the sole year-around inhabitants of Core Banks; Mr. Reeves maintains an A-frame house there for recreational purposes. Yet both neighbors have found that the fight against soil erosion requires nothing less than a full-time effort. One glance at the map will suffice to show just how precariously Cape Lookout juts into the Atlantic, and if you have ever experienced a storm on Cape Lookout, you would not need a map to prove the point.

To help in the fight against soil erosion, Boy Scout Troop #326 decided to go to the Cape and plant pine seedlings in the island's interior, and American beachgrass on the dunes. I was solicited to write the story and take the pictures, but I also got in on the act. With the help of Mr. Jim Parrot, a branch manager for Wachovia Bank, we secured the Reeves' A-frame for lodging one weekend, and were kindly transported to the Cape by a local Coast Guard detail.

The planting started Saturday morning. Dividing ourselves into crews of three, we first planted the pine seedlings in rows parallel to the existing trees — thus, the new plants would be somewhat protected from the wind. The lead man in each unit would dig the holes — about six or so inches deep —, the following man would stick in the seedling, and the last would cover up the hole, taking care that the young pine was securely rooted in the soil. The average space between the seedlings was about five feet. In this manner we planted some thousand trees in two hours.

Before lunch we had also planted some two thousand beachgrass shoots on the barren dunes facing the Atlantic. For this task, the procedure was similar to the one we had perfected while planting the pines. Again, we divided up into

Although the lines of abandoned automobiles aren't exactly delights to the eye, they do make starting points for beachgrass plantings. Sand has blown into high mounds around them and against snow fencing (left) near Cape Lookout lighthouse. Time will tell whether such efforts will reduce beach erosion.

groups of three, the division of labor being the same as before, and with each crew loaded down with a supply of beachgrass, spread out over different sectors of the beach. This time the holes were dug approximately 8-10 inches deep, with two or three shoots per hole. The distance between our beachgrass clusters was about one to two feet.

According to the best information we could find on the subject, American beachgrass should be planted in such a fashion that the greatest density of the plants is at the top of the dune, with proportionally greater spacing the further down the dune one goes. Thus, the grass has a better chance of catching the sand that may be blown over the top. One reason beachgrass is ideal for dune stabilization is that the plant grows fast enough to keep it from being buried by the new sand deposits — the buried stem throws out new root runners as the dune grows in height.

Miraculously, we finished all of our planting by lunchtime — and it was fortunate that we did. By early afternoon, we saw our opponent in good form, as the wind picked up from the south to the tune of 60-70 miles per hour. By mid-afternoon, the storm had produced ocean-sized waves on the sound, which made me very grateful that I was not facing the open Atlantic.

Much has been said recently about the problem of soil erosion on our Outer Banks. Yet, erosion is nothing new to these barrier islands — the silting of old inlets, and the creation of new ones have been well documented throughout North Carolina history. However, with the spread of civilization along not only the Outer Banks, but also the mainland shores, there has been increasing demand for a stabilization of this ever-changing area. The artificial opening of Drum Inlet for the benefit of the fishermen of Atlantic is a worthy example of this demand.

Nevertheless, man and nature have rarely seen eye to eye on this matter of stability — on the Outer Banks, nature changes and man resists those changes. Not too long ago, the Cape Hatteras National Seashore officials showed some indication that they might be willing to compromise with the inevitable, and let the barrier islands adjust themselves naturally, rather than be "stabilized" by expensive efforts at erosion correction. Whether this potential course of action is advisable is certainly too far out of my realm for me to judge, yet man will still attempt to cheat the waves — and should. If an ounce of prevention is worth a pound of cure, then the planting of trees and beachgrass along our coasts could have a lot of value.

Paddle Your Way to Adventure

by Lawrence S. Lane

This is the second in a series of articles on the canoe and how to use it.

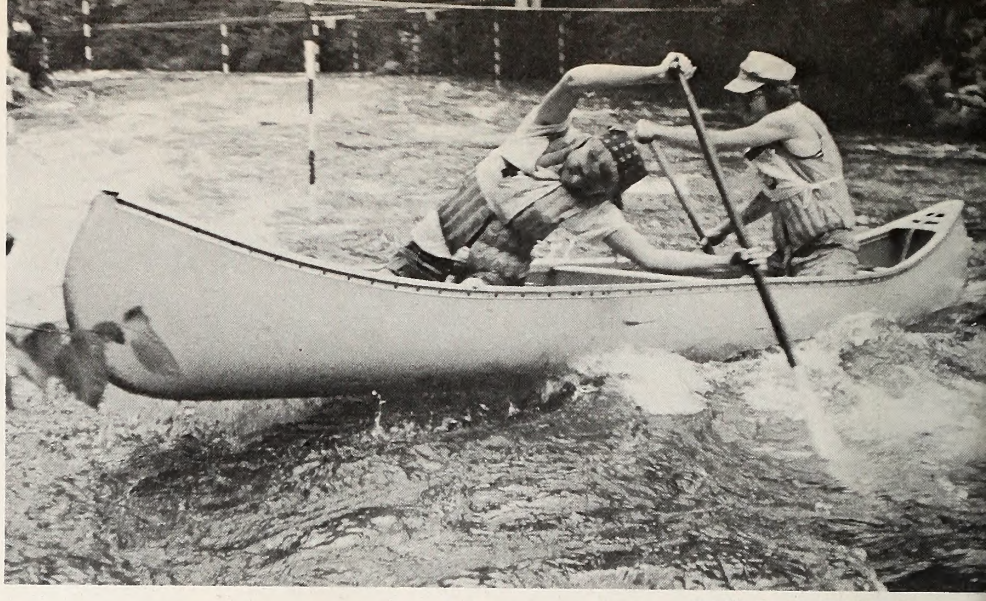


PHOTO BY ED JENKINS

This is competitive canoeing and not advised for any but the experienced canoeist. This water craft is versatile and can be adapted to many water duties, but it must be used with respect and care.

SPORTSMEN everywhere are suddenly expressing a desire to learn how to paddle their own canoes. Canoe sales are at an all time high and state recreation agencies are being requested to provide more canoe trails. Many new canoe rental agencies have been established in recent years, primarily in the western section of the state.

Learning the strokes necessary to handle a canoe on any type of water, under any given condition requires much practice. But for the beginner, four or five basic strokes will suffice.

You can get plenty of use and pleasure from a canoe while you are learning to handle one. You don't have to expose yourself to wilderness conditions to master many of the fine points of canoe handling. Much can be learned on weekend trips on lakes or ponds near your home.

Learning the basic strokes used in ordinary paddling is not hard. After you know the strokes, learning becomes a matter of exposing yourself to progressively more difficult conditions.

It's important to start out right. A good book of instructions can be helpful in this respect since an article such as this can only serve as an introduction to the sport. There are a number of good books on canoeing, and one of the best is "Basic Canoeing," one of the American Red Cross handbooks. Its 67 pages are profusely illustrated and the text covers all phases of canoeing. The book can be obtained from local Red Cross Chapters or ordered direct from The American Red Cross National Headquarters, Washington, D. C.

Book knowledge should quickly be put into practice on fairly easy water. Once you have mastered simple paddling, you might want to take advantage of outfitters plans, especially the ones providing experienced guides.

Another method of learning would be to join a canoe club that holds weekend outings. The Carolina Canoe Club, P. O. Box 9011, Greensboro, N. C. 27408, is a group who are interested in many phases of canoeing. Newcomers have an opportunity to take exploratory trips as well as camping and white water outings.

Most canoe clubs have a rating system that denotes levels of skill and experience. The rating system is important for two reasons. The first is safety, as this method can prevent dangerous mismatches between paddler and water. Second, it enables canoers of different levels of skill to enjoy their own kinds of water, since any group cannot operate much beyond the level set by its least able member.

Here in condensed form, is the rating system used by the Appalachian Mountain Club.

Class I. A beginner. Knows the basic strokes and can handle a canoe competently in smooth water.

Class II. A novice. Can use effectively all basic strokes in the kayak or in both bow and stern of the canoe. Can read water and negotiate easy rapids with assurance.

Class III. An intermediate. Can negotiate rapids requiring complex sequential maneuvering. Can use eddy turns and basic bow-upstream techniques. Is skillful in canoe or kayak, in intermediate rapids.

Class IV. An expert. Has proven ability to run difficult rapids in both bow and stern of double canoe, and single in canoe or kayak. Has skill in heavy water and complex rapids.

Class V. A senior leader. In addition to expert canoeing skills, has wide experience and good judgement for leading trips on any river.

Canoe paddling is a matter of balance and coordination and position in the canoe. Nearly all this comes naturally, although understanding and practice will make you more skillful. Some canoes have seats, others are sold seatless. Either way, alone in a canoe or operating in tandem with a partner, a kneeling position is by all means the safest. A rubber gardening mat will make the kneeling easier and can help to keep your bottom dry if you occasionally paddle from a sitting position while on calm water.

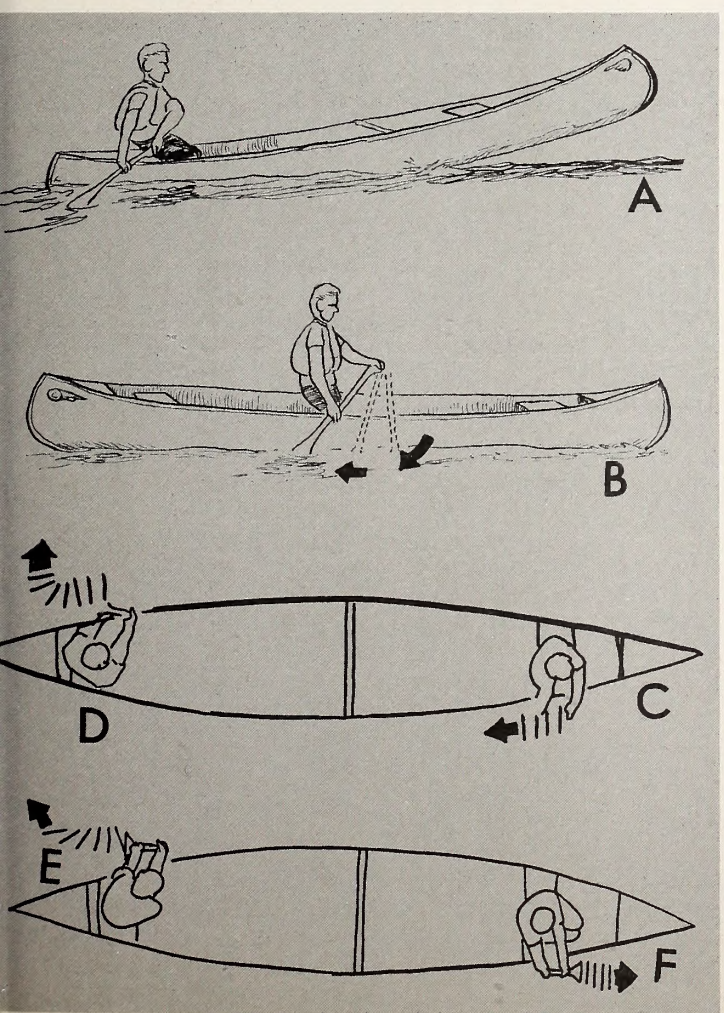
One of the most efficient solo paddling positions calls for settling yourself on your knee or knees ahead of the stern seat, or about one-third of the way forward

in the canoe, where it is often possible to use the stern thwart as a backrest. This location distributes your weight and helps to maintain an even keel. The solo canoeist who wants to sit while he paddles can also achieve better balance by sitting on the bow seat faced aft. This way the conventional stern becomes the bow when you are underway.

The forward or bow stroke is the fundamental action used in all other strokes. No matter which side of the canoe you are working, you place one hand on the grip of the paddle and take hold of the shaft with the other, so that you are able to wield the paddle in a variety of perpendicular positions. Reach forward, dip the blade into the water, and pull back with your lower hand while pushing forward with the hand on the grip. The canoe moves ahead most efficiently as the paddle passes through its midpoint position. Be sure to keep the paddle close to the side of the canoe.

The backwater stroke, used to reverse direction, halt headway, or hold the canoe in position, involves similar movements, done in reverse order. If you will turn the paddle blade so it is horizontal with the flat side to the water as you carry it through the air to begin another stroke, you will lessen wind resistance and reduce the risk of a wave catching the blade and throwing you off balance.

Although these diagrams may help with your canoeing, it is best to get on-the-spot instruction. Sketch "A" indicates an improper position in a canoe, resulting in frontend overhang which could be dangerous. Sketch "B" shows proper position in canoe and one type of forward stroke. "C" is the draw or cruising stroke. "D" is the J stroke. "E" is the pitch stroke. 'F" is the reverse stroke. Wear your life jacket and keep practicing.



In solo paddling, the first thing to learn is the knack of maintaining a straight course without having to change sides with almost every stroke. Beginners sometimes offset this twisting action by trailing the paddle and using it as a rudder. This is less efficient than the J, or stern steering stroke, which is used to keep a canoe on a straight course.

This stroke is the one taught at most summer camps, simply because it is the easiest to understand. The name comes from the shape the trace has if you give a push-over or reverse draw stroke at the end of a regular, straight-back, bow stroke. Most experienced canoemen find that this extra push-over at the end of the stroke requires a lot of energy and is therefore tiring if one has to paddle for a very long time. Therefore, most canoeists use a variation of the J stroke, called the Canadian J or pitch stroke.

The pitch stroke accomplishes an efficient combination of the needed forward thrust of the bow stroke with the corrective steering action of the J stroke. The difference between the pitch and J strokes is that the J stroke causes the canoe to slightly zig-zig, whereas the pitch allows a straight ahead progression, with less effort exerted.

The secret of doing the pitch stroke lies in the wrist action. The blade of the paddle is changed gradually throughout the stroke by the outward rolling of the wrist. If, as the stroke nears its end, you can see there has not been enough compensation and you need to pull the canoe back in line still more, you can easily give this added steering by continuing to roll your wrist even farther. When you do this, the blade, which would otherwise have ended up parallel with the canoe, is turned into a rudder by being angled to the direction of movement.

By letting it trail a short time beside you, the bow will swing that added amount you felt you needed. If still more turn is needed, simply push out the blade by prying your upper arm inboard. At this point you have, in effect, given what started out a pitch stroke, a J stroke ending.

The silent Indian stroke, underwater stroke or hunting stroke is still another variation of the pitch stroke. This stroke is not easily done, for it must be done in absolute silence. It is used primarily for stalking game.

In using this stroke, the paddle must be returned to its original starting position completely under water. This is achieved by turning the blade vertically to the canoe and pushing forward until the arm is in position to start another stroke. Do not lift the blade out of the water, but rather let only the round part of the paddle handle break the water. If the blade should come out of the water even the slightest, a gurgling noise will be created that will sound an alarm to every wild creature along the shoreline.

There must be at least fifty strokes and variations that can be used in paddling a canoe, especially for fast water canoeing, but there is no need for the beginner to try to learn them all. Experience and group outings will give you the basics and there will be plenty of time to progress into more advanced canoeing.

These basic strokes will give the beginner a good feel of his canoe and hopefully an addiction to one of the most fascinating and relaxing pastimes offered in todays urban society.

The Pond in Spring

Water Lily (left)

Damsel Flies (above)

Great Blue Heron (left)

Blue-Wing Teal (above)

PHOTO FEATURE BY
WILLIAM T. BRYSON

Osprey

Black Duck

The pond, that saucer of water that is multiplied several thousand-fold over North Carolina, may be one answer to relaxation and fishing close to home. As we become increasingly energy conscious, the frequent weekend jaunt to the mountains or the beach is being curtailed. Fortunately, the many ponds that dot the countryside come to the rescue.

Very likely we whiz by dozens of ponds on our way to fishing and vacation spots without realizing the potential we are passing by. Some of the best fishing in the state is available in the two to three acre pond. The bird life is often exceptional. Even the vegetation is worthy of study.

Most of these waters are privately owned and it may take a bit of scouting and conversation before you obtain permission to visit the pond. Make it. clear to the owner just what you plan to do, and certainly make sure that you leave the pond and its surroundings in good order. The outdoor manners that apply to the hunter about the gates left open, the trash scattered, and so forth, must apply to everyone.

Although fishing is one of the big drawing cards of the pond, don't overlook the other possibilities for nature observing. Depending on the pond's size, proximity to human activity, and general environmental situation, it very likely will have its share of water birds. These populations will vary from season to season, and the changes themselves are interesting.

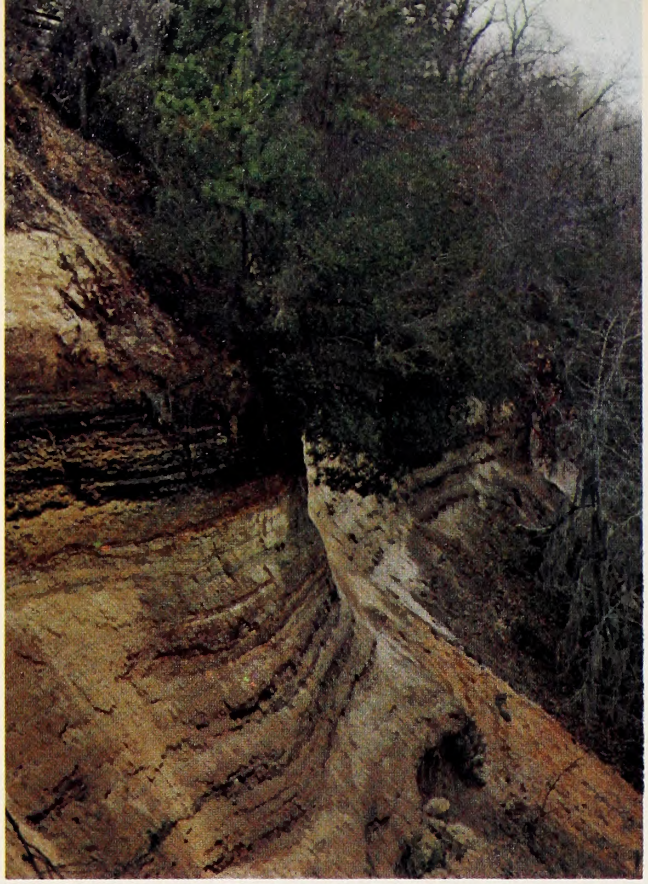
Wood duck nesting boxes may attract this colorful waterfowl. If the pond has a woodland setting and trees around it, give the nest boxes a try.

Most fish-eating birds certainly do little if any harm to fish populations in ponds. What few they may take are completely offset by the snakes and turtles they control.

Actually the snake populations around most ponds are not great and should not discourage you from enjoying these areas. Water snakes are generally shy and retiring, and seldom make themselves nuisances.

Water mammals, the muskrat, mink, even beaver and otter, are often interesting pond citizens. Late afternoon or early morning may be the best times to see these, as they feed or tend their young.

Indeed, ponds are a source of interest and enjoyment available to just about everyone. Spring makes an unusually fine time to discover the ponds near you, but these water worlds know no season. The simmering of mid summer, or the slumber of winter's snow, life in the pond goes on.

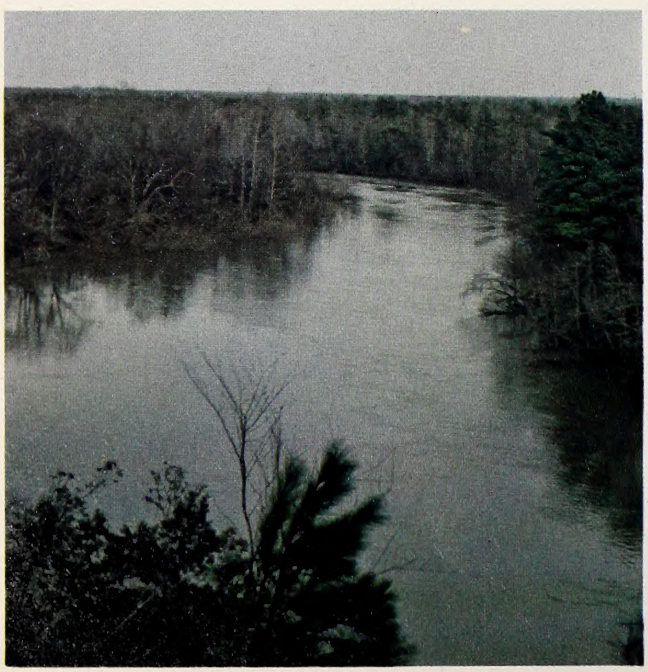


PHOTOS BY DAVE DUMONT

The Neuse River (below) runs through the northeastern portion of the Park. The 98 foot, steep cliff on the west bank, forms the main scenic attraction. Many different plant species are found on top and along the cliff crevices.

Plant Life of the Cliffs of the Neuse

by V. Charles Bruton



THE Cliffs of the Neuse State Park is one of the most diverse vegetational areas found in the Coastal Plain of North Carolina. This 521 acre tract of land lies in the southeastern portion of Wayne County approximately 15 miles southwest of Goldsboro. The Neuse River runs through a portion of the Park property, and the 98 foot steep cliff on the west banks of the river forms the main scenic attraction of the Park. It is this spectacular cliff that gives the Park its name.

In addition to the Neuse River, a lake, dry upland pinelands, and rich bottomland hardwoods add to the total diversity of habitats. A unique aspect of the vegetation is the large amount of Spanish moss present in forested areas but most common near the river. This lower coastal plain species is probably near its westernmost limits of distribution in the state at the Park. Adding to the floristic diversity, a typical mountain plant, galax, is also abundant on well-drained, mesic slopes throughout the Park and is often observed in solid mats covering the forest floor. Likewise, the presence of two other typically more western species, red oak and Virginia pine, and a typically coastal species live oak, serve to point out the unusual mixture of trees, shrubs, and herbaceous plants found in this State Park.

The vegetation of this Park is composed of six different community types. They are: (1) mixed pine-hardwoods, (2) deciduous hardwoods, (3) river margin, (4) *xeric coarse sand, (5) disturbed and (6) aquatic. Each of these community types will be described briefly.

Mixed Pine-Hardwoods Community

The mixed pine-hardwood community is the most wide-spread community type found in the Park. This community is found both on the upland more or less xeric habitats, and in some of the **mesic ravines, where the soil is moist, but not permanently wet.

The more xeric species of this community type are observed on nearly level land surfaces which are well drained, and have soils ranging from sandy loams to more moderately compact loams. Loblolly pine, post oak, scrubby post oak, southern red oak, and to a lesser degree, black jack oak, are the major canopy species found on these upland sites. Trees found intermingled with the above, but to a lesser degree, are dogwood, American holly, wax myrtle, mockernut and sand hickory, and sassafras. These plants, however, are more typically noted in the understory. From the many herbs noted, those that appear to be dominant in this area are yellow jessamine, honeysuckle, and bracken fern.

As one passes into the more mesic habitats of this mixed pine-hardwood community, the species composition changes but the general aspect remains much the same. The topography is slightly more rolling, and the soil becomes more loamy. The xeric oaks are replaced by white, water, and black oak. Other dominant trees observed in the canopy layer are sweet gum, red maple, beech, and loblolly pine. One of the key indications that these areas are wetter, is the presence of cane in the herbaceous layer. In several

* Characterized by low or deficient moisture.

** Characterized by adequate or abundant moisture.

areas of the Park, this grass is seen occupying the lower areas within this community type, but as one approaches the higher uplands and surrounding ridges, this species begins to diminish and is absent in the drier sites.

Deciduous Hardwoods Community

The deciduous hardwoods community is best exemplified in the lower areas surrounding Mill Creek and Still Creek, a larger area in the vicinity of the Nature Trail just north of the Park museum, and in the stand of bottomland woods directly in front of the "cliffs" on the east side of the Neuse River. A few other small areas of hardwoods are present in the Park, but are not as fully developed as those mentioned above.

The main species making up the canopy of this

A unique aspect of the vegetation is the large amount of Spanish moss present in the forested areas, particularly along the river. This hardwood stand (lower left) is along the Nature Trail just north of Park Museum.

community type are sweet gum, black gum, red maple, pig-nut hickory, red ash, black walnut, beech, and several species of oak including white, water, overcup, willow, swamp chestnut, black, and southern red oak. Loblolly pine, a dominant tree on the upland habitats in the Park, is present in these bottomlands only to a limited degree. Species occurring in the understory layer are sourwood, red mulberry, ironwood, hop hornbean, storax, sweet bay, dwarf pawpaw, witch hazel, and dogwood. In the herbaceous layer, galax, partridge-berry and heart-leaf are very common. Many ferns including Christmas, cinnamon, royal, and resurrection are also common in this low bottomland habitat.

River Margin Community

The river margin community is restricted to narrow tracts of land bordering the banks of the Neuse River. The habitat of these banks vary from sandy soils to those of a clay type. This community is easily recognized by the presence of river birch, sycamore, black willow, bald cypress, black gum, red ash, and ironwood.

In the northeastern portion of the Park, the habitat conditions are different. Water is seen standing above the ground surface, sometimes as much as two feet in depth. This area in the Park is located along the Neuse River, but the community extends further inland than at any other point in the Park, and is due primarily to the low landscape in this area. In this community cypress and black gum trees occupy soils which are not subject to drying out in the late summer. Ironwood, red maple, and sweet gum also make up the canopy layer. River birch is not as plentiful in this inland area as it is on the river banks, and black willow is completely absent. Practically no herbaceous plants are present, due probably to the long periods of standing water.

Xeric Coarse Sand Community

The xeric coarse sand community is observed on the upper and more level land surfaces in the Park, and the vegetation is typical of that found in the sandhills of North Carolina. The canopy layer of this community type is relatively low and the area is fairly open. The primary trees present are loblolly and longleaf pine, and turkey oak. However, scattered throughout this area, oak species such as post, scrubby post, black jack, and blue jack are present. A few of the many shrub and herbaceous plants are dangleberry, dwarf huckleberry, St. Andrew's cross, wire grass, and bunch grass.

Disturbed Community

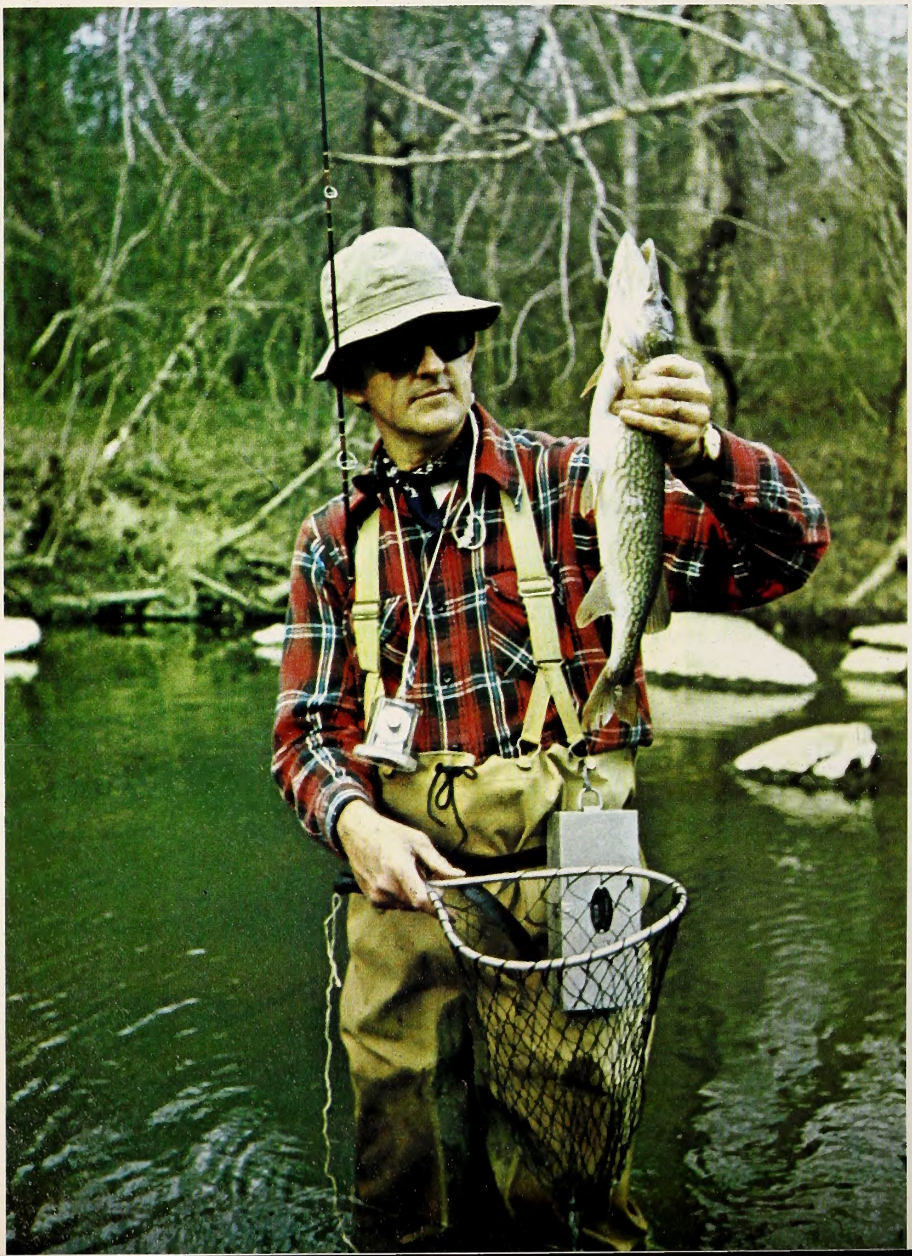
Disturbed plant communities are found primarily along roadsides, ditch banks, edges of parking areas, and waste areas throughout the wooded section of the Park. Many plants representing quite a diverse group of families are observed in these sites. A few of the more common flowering plants include black-eyed Susan, bitterweed, plantain, ragweed, hercules club, indigo, butterfly weed, and wolly mullen.

Aquatic Community

The aquatic community contains very few species

• **continued on page 27**

Small Stream Fishing



• It's all very pleasant. Yo
flowing along a corridor of
might have a rocky or sandy
out here and there like giant

There are no sounds except
birds in the nearby trees and
rod as you cast a tiny spinner

You have the whole stream
be the only person to fish it

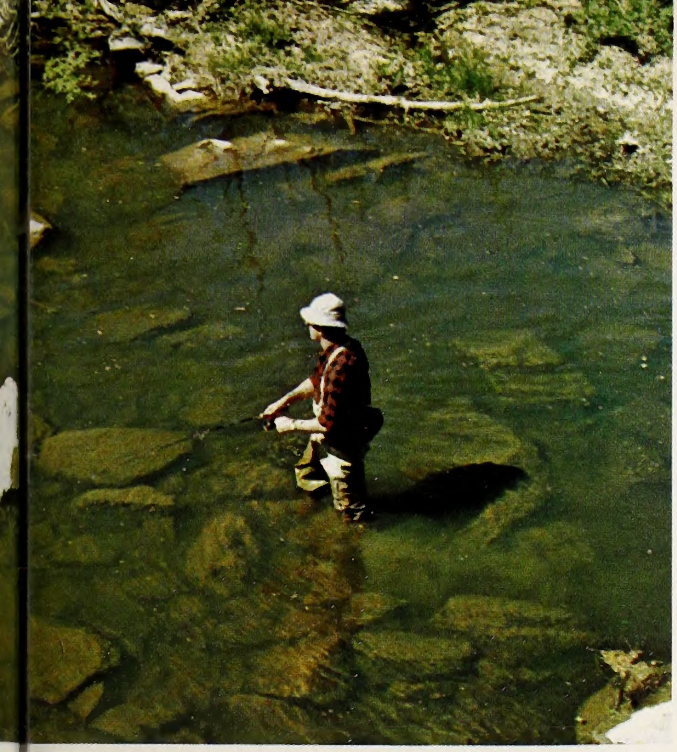
No one really knows how m
streams there are in North C
they constitute one of the sta
That's particularly true of th
the foothills to the edge of th

Quite simply, nobody fishes
hard to fish? No, although yo
walking. Is it because they o
It's a hard question to answ
small streams are neglected p
realizes how much fun they a

Over the past few years, Te
a few of these forgotten strea
the fishing has been excellen

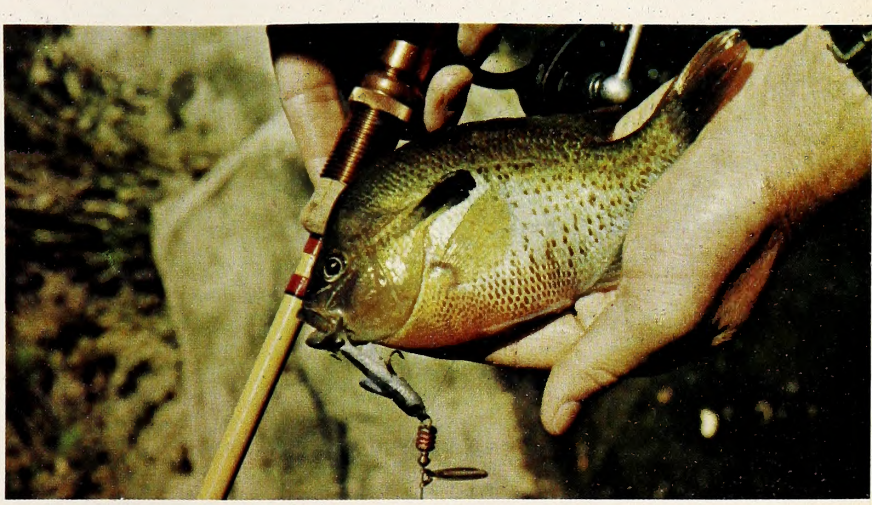
One day last spring was pa
caught lots of robin, several h
caught the largest pickerel, a
spinning tackle, a fish like th

All you need to get in on th
rod with four-pound test mon
pair of felt-soled waders and
out the streams where you liv
most promising. You won't b
missing . . . JIM DEAN



ade the slightly dingy water
greenery. The stream
om. Deep pools are strung
s.
gurgle of running water, the
ccasional swish of your
nst a shady bank.
ourself. In fact, you may
g the entire year.
miles of small creeks and
na. Without a doubt,
most underfished resources.
eams in the Piedmont from
astal Plain.
m. Is it because they are
ay have to do a little
poor fishing. No. Then why?
t chances are that these
rily because no one
fish.
ssett and I have fished quite
and almost invariably,

arly memorable. We
nd two chain pickerel. Ted
ncher. On ultra-light
a real treat.
is an ultra-light spinning
nent, a box of tiny spinners, a
p. Using the map, check
n fish those which look
e what you've been



Robin (above)

Roanoke Bass (below)

Those Neglected Small Streams

FISHING

by Jim Dean

ELSEWHERE in this issue, you may have noticed the color layout on small stream fishing — especially that picture of Ted Dossett hoisting that big chain pickerel.

Perhaps you've caught bigger pickerel (or jacks) in ponds or lakes in North Carolina. After all, pickerel reach better than nine pounds, though any fish over three pounds is a good one.

The thing that distinguishes Ted's pickerel is the fact that it was caught in a small Piedmont stream only about 20 feet wide. Furthermore, this isn't the largest pickerel Ted has caught in such streams.

Not only does Ted catch some nice pickerel, he also catches lots of redbreast sunfish (robin), bluegills and bass. His largest bass from a small stream pushed five pounds. Robin in the one-pound class, while not common, are a possibility. Ted has also taken Roanoke bass up to about a pound and a half.

All of these fish — and other species as well — can be caught in small creeks that can be easily waded. If you drive across the Piedmont, you cross dozens of these creeks, and most people never realize that they offer such interesting and varied fishing.

I happened to be with Ted when he caught that pickerel. It was a day I'll never forget.

Frankly, although I'd heard Ted talk about small stream fishing, I wasn't expecting much when we left the office one warm spring day and drove about an hour to one of Ted's favorite streams.

When we stopped at the stream, I was surprised at how small it was. It didn't seem large enough or deep enough to hold anything worth catching.

Ted made no promises, but he had this bemused smirk on his face as we rigged up our ultra-light spinning rods and tromped off through the woods towards the section of the stream we planned to fish.

We were wearing felt-soled waders to keep from slipping on the rocks. When we started to fish, the stream was too narrow for both of us to fish abreast, so we alternated on each pool.

I made a cast with a small spinner, and reeled it back alongside some rocks. A shadow appeared behind the spinner, then grabbed it. A moment later, I landed a hand-sized robin, beautifully dressed in orange, gold and blue.

We fished several hundred yards of stream, catching perhaps 40 or more robin that ranged in size from three inches to about 12 ounces. We also caught two bass and a pickerel. As I recall, one of the bass weighed about two pounds, while the pickerel was 16 inches.

Late in the afternoon, we came to a long pool. It was Ted's turn to fish, and he stepped ahead of me into the tail of the pool. Up ahead, the water rippled next to the bank as something big moved. Ted made a cast, and I caught a glimpse of a long, pale shape as it dashed across the pool and grabbed the tiny spinner.

The water boiled as the big pickerel rolled on the surface. The drag on Ted's reel screeched as the fish headed first upstream, then turned suddenly and came back towards us.

With some adroit footwork, Ted managed to keep the pickerel from passing between his legs on its swift downstream flight, and several minutes later, he finally landed him. I quickly snapped a photo, then Ted released the fish to fight again another day.

That day made a believer out of me. In fact, I'm convinced that wading a small Piedmont stream is one of the best ways a fisherman can spend an afternoon, particularly in the spring and early summer.

Two or three tips might be in order, however. By all means, use ultra-light spinning tackle with not more than four-pound test line. You'll have more fun and catch more fish. Small spinners will work best, especially those like the Mepps or Panther Martin. Ted and I both like the Mepps Minnow with spinner for bass and jacks.

Try to fish all the water. You'll find most of the fish in the deeper pools, but the robin may be in the swifter water at the heads of pools. Fish deep around rocks, and also fish any shaded areas along the sides of the stream. Polaroid sunglasses will help you see the bottom for easier wading.

I doubt that you'll have any trouble finding a good stream to fish because there are so many. However, you might want to buy county maps from the State Highway Department to help you locate streams and county roads leading to them. If so, write N. C. Department of Transportation, Head of Location And Surveys, Raleigh, N. C. 27611. Each county map costs 15 cents, plus four percent sales tax. ▲▼

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Tail-end of the Gobbler Season

By the time you read this, the wild turkey season will be history for most of you. For those hunters in and west of Stokes, Surry, Wilkes, Alexander, Caldwell, Burke and Cleveland counties, May 10 is your last day for spring gobblers. And remember, the turkeys killed must be tagged at a Wildlife Cooperator Agent location.

Boat Ready?

Division X of the Coast Guard Auxiliary, with Flotillas in Morehead City, New River, Wilmington, Southport and Fayetteville—along with all of the Divisions of District V—will be observing Courtesy Motorboat Examination Week —May 31st thru June 8th. Courtesy Motorboat Examiners will be stationed at Public Launching Areas—Marinas—and other busy docking and fueling spots to inspect all types of pleasure boats.

Quail Prints Still Available

The reprinted January 1975 WILDLIFE cover of the bobwhites placed on sale by the Wildlife Commission last month has been well received. A limited number are still available at $3 each, postpaid. They measure about 14 by 19 inches, with the white border. Make checks to the Wildlife Commission, and send requests to Education, Wildlife Commission, 325 N. Salisbury Street, Raleigh, N. C. 27611.

Going Fishing?

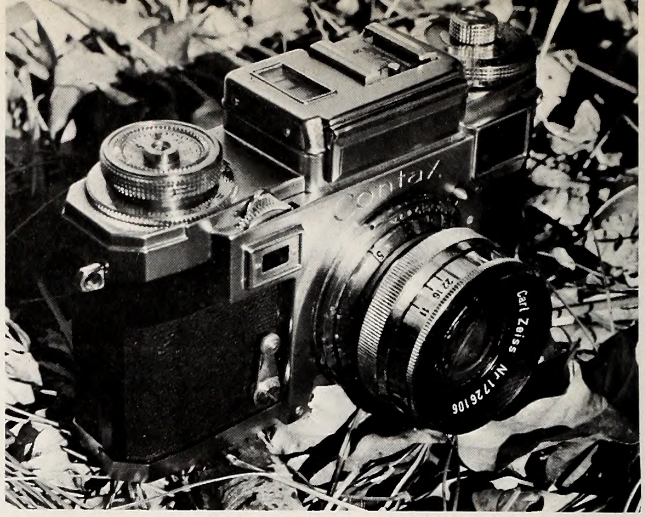
Coastal fishing is steadily picking up and if you need some help in finding a likely place to fish, you may want to consider the "N. C. Coastal Fishing and Vacation Guide" for 1975, available from the Graphic Press, Inc., Box 26808, Raleigh, N. C. 27611 at $3.00 postpaid.

Flipped Photos

The caption on page 17 of the April issue of WILDLIFE is correct, it's the two top photos that changed places. Just tell the egret and the heron to switch, please.

Proper Care for the Outdoorsman's Camera

by Ferman Karriker
Operator of Karriker's Camera Repair Service



Photos by the Author

• If you are a hunter, fisherman, naturalist, or conservationist, you probably also engage in the nation's number one hobby: photography. Whatever your level of interest in photography, chances are you have invested a considerable amount of money in a camera and/or related equipment.

This discussion of proper care procedures could help you prolong the life of a valuable piece of equipment or avoid unnecessary costly repair bills.

Today's modern cameras are very delicate and fragile instruments, facing many environmental enemies in the outdoors. Some of the worst enemies are: dirt, water, humidity, heat, cold, wind, and sand. Besides the natural enemies, another potential hazard to a camera is the photographer. Damage from the photographer may come in the form of mishandling, tinkering, improper cleaning, or dropping.

Never operate a camera unless you have read the manual or are familiar with it. Improper operation techniques can seriously damage internal parts, causing a costly repair. If a camera malfunctions, never allow anyone to "see if I can fix it." Inept tinkering will only double or triple the problems, and the bill, from the inevitable repair. Take or ship your equipment (well packed) to the nearest trained camera repair technician.

Obviously, dropping a camera and/or lens can be a disaster, causing misalignment of mechanical and optical parts. If a camera is dropped or receives a shocking blow you should immediately make a test of the lens set at several different focusing distances (recorded) before the lens is used for an important picture-shooting session. The optical elements may have jarred out of alignment without being noticed and ruin a lot of important pictures before the problem is discovered. When you or anyone else handles your camera make sure the first thing they do is put the strap around their neck. Also frequently check the condition of the strap and the metal linkage to the camera lugs. A loose neckstrap lug should be tightened by a technician immediately.

If you or someone else doesn't know proper cleaning materials and techniques, don't clean a lens or mirror until you do. The best lens cleaning method known is to hold the lens up over your head and gently breathe up onto the glass until your breath condenses on it, then gently wipe in a circular motion with special lens cleaning tissues. The reason for breathing up is to prevent any salty saliva from dropping on the lens. The moisture from your breath is equal to distilled water and will do no harm. Commercial cleaning fluids can seep around the edges, dissolving lens cement and should be used only when absolutely necessary to remove the stubbornest stains. Most of the time, if proper lens covers are used, the only cleaning required consists of dusting with a soft, clean blower brush. A skylight filter, or clear optical glass filter will protect your glass elements from dirt and water while you are shooting. Besides keeping the sun from flaring in your lens, a hood of the proper depth will also keep out a lot of dirt and water.

A mirror, such as the kind used in a single lens reflex or in rangefinders and beamsplitters, should not be cleaned until absolutely necessary. Optical mirrors are silvered on the top surface and are extremely delicate, even more so than a lens surface. Mirror cleaning should consist of a careful dusting with a clean, soft brush only. Any other, more extensive cleaning than is necessary could scratch the silvered surface and should be performed by a technician.

The same discussion about mirrors also applies to the ground glass, fresnel, mico-prism, view finder systems of single lens reflexes. A certain amount of dirt in these finder systems is normal and extensive cleaning should probably be postponed until a time when the whole camera needs to be cleaned, lubricated, and adjusted thereby saving another disassembly fee.

Here are a couple of absolute taboos concerning camera care. Never allow silicone tissues made for cleaning eyeglasses to come near your camera. They will damage or remove the delicate lens coating. Never allow any oil or grease to be used on your camera. It requires special kinds of lubricants in different places, in certain amounts, and can only be properly lubricated by a technician.

After a hard day's use in the outdoors, your camera and lens mount should be thoroughly but gently dusted with a typewriter brush on the outer surface. If this dirt isn't removed it will work its way inside causing the exposure related mechanisms to slow down or stop working. Even with good care, dirt will get inside gradually to the point where the shutter speeds and diaphragm exposure combinations are out of tolerance and the camera will need a cleaning, lubrication, and adjustment. This time usually arrives between one to four years depending on how dirty

the surroundings are and how much the camera is used.

Plastic bags, umbrellas, rain coats, ever-ready cases, equipment carrying cases, and underwater housings are some of the devices that can be used to protect cameras from water hazards. If you get caught without any of these, use your hat, folded handkerchief, coat, or the shirt off your back wrapped around your camera for some protection. Water, especially salt water, will ruin the insides of a camera in short order. If your camera is dropped in a lake, river, ocean, or soaked through by the elements, it might be saved by quick action.

After fishing it out of the water, completely submerge it in fresh water (preferably distilled water) and quickly hightail it to the nearest repair man. Explain the situation and he can tell you whether it can be saved. If you can't get to a repairman the same day (or the next) a fresh water soaking might be cured by drying out in a warm oven (not over 110 degrees Fahrenheit). In the case of salt water the situation might be hopeless, but anything will be worth a try. Rinse or soak the salty camera in fresh or distilled water then try the oven drying technique. These are emergency procedures at best and may not work well depending on the situation and camera.

In case of accident, loss, or theft; a low cost insurance policy covering the value of equipment at time of loss will help defray the cost of replacement or pay most of the repair bill in cases like the water damages above. The policy contains a detailed list of all equipment with serial numbers and is legal proof of ownership.

A towel around the photographer's neck in hot, humid weather can be used to wipe perspiration from face and neck and keep it from dripping onto the camera. If a camera must be handled with perspiring hands, it should be thoroughly cleaned on the outsides with a clean, soft, lintfree, cloth or chamois.

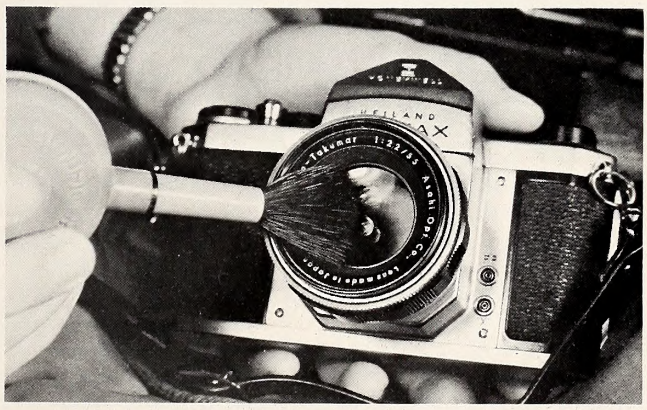
Photo equipment should always be kept as dry and cool as possible. Heat in excess of 100° can cause lubricants to run and gum up the works, cement in lenses to dissolve, and film emulsion to melt. If a camera is left with the sun shining in the lens it will concentrate the light rays onto the shutter curtain and burn a small neat hole through the curtain. The worst offender regarding heat and camera is a closed car in the sun. Never leave a camera uncovered in a car in sunshine, and even in a case over long periods of time temperatures can exceed 120°F. White or silver, insulated cases offer good protection from heat and humidity, but even these can become hot over long periods of time in closed cars.

A styrofoam ice box makes a good, inexpensive equipment carrying case for auto travel. The inside can be divided up with corrugated box material. A chemical drying agent called silicagel dessicant placed inside the ice box will offer further protection against humidity but the lid should be closed as much as possible. In prolonged spells of extreme heat, a waterproof container of ice can be added in the box. Don't let the equipment or film come in contact with the ice container, because when the lid is opened moisture will condense on the ice.

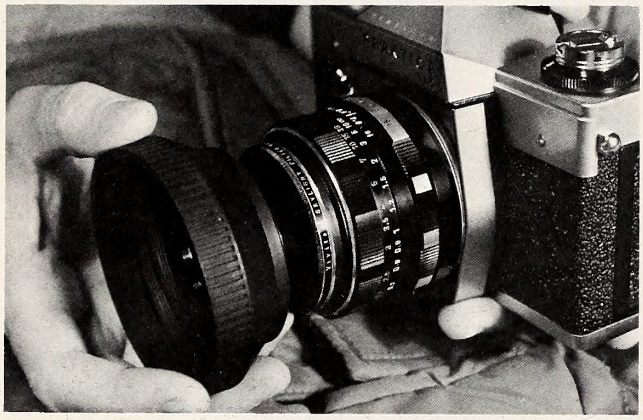
Any time there is a wind blowing onto your camera, you can be assured it is being "sandblasted" by airborne particles of dust, dirt, or water. If possible, work with your back to the wind, especially at the seashore where sand and saltwater spray are hazards.

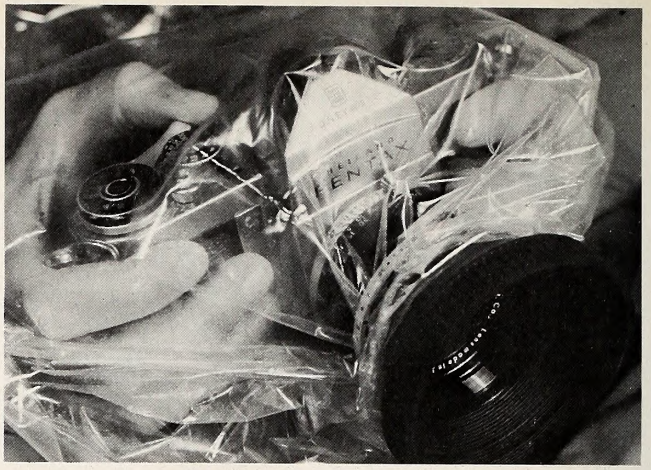
Good camera equipment represents a substantial investment and should be constantly cared for. The Contax at left is a pre-World War II classic example of fine German craftsmanship.

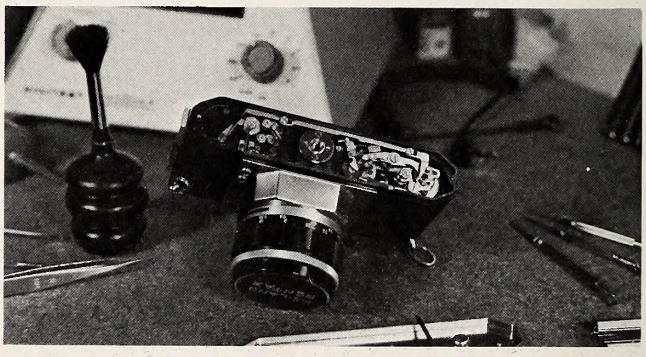
A camera used in the outdoors is subject to the hazards of dirt, water, humidity, heat, cold and sand. Lens caps (front and rear) and body caps are a must if you switch lenses in the field. Get a large blower brush (below) and keep the bristles CLEAN. The bristles can be cleaned in alcohol.



Dust and dirt can cause serious problems, but the only cleaning you should perform on an optical mirror is to dust it carefully with a clean, soft brush (below).







If you carry two cameras around your neck (left), shorten the strap on one to prevent the camera bodies from bumping together. A large plastic bag with holes for lens and viewfinder (above) can be secured to the lenshood by a rubber band for protection while shooting in the rain. A skylight or clear optical glass filter and sunshade (lower left) help protect the lens and front element. Even with the best of care, all complex cameras need to be cleaned, lubricated, and adjusted every few years by a qualified technician.

The before mentioned filters, sunshades, and ever-ready cases will give some protection here.

Cameras and film are just like guns and scopes in at least one respect. They must be allowed to acclimate under cover when transferred from one extreme temperature to another. If you have had your cameras outside in cold weather for several hours and bring them inside, you may be inviting disaster. The humidity indoors will condense all over the camera and seep inside through the crevices, also if you remove the exposed film, immediately moisture droplets will form on it, ruining your hard earned pictures with spots. The only solution is to firmly encase the camera inside a container that is the same cold temperature as the camera, bring this indoors and allow the total closed package to slowly come to room temperature over a period of a few hours before being opened.

A similar problem in reverse is encountered when a warm camera is taken outside in cold, snowy weather. The snow or sleet melts on a warm camera and gradually refreezes from the low temperature. The result is an iced over lens and frozen up focusing mount and f-stop ring. When this camera is thawed out it must be thoroughly wiped while thawing to keep water from seeping inside. The prevention of this problem is the same slow acclimating period as mentioned above.

Although cold weather itself rarely damages cameras, it will present serious difficulties to the photographer. The first of these is the swift death of any batteries contained in your equipment. Low temperatures mean you cannot operate a camera in the automatic mode because the cadmium sulfide (cds) exposure meter will not operate. Read exposures with a selenium cell (batteryless) meter and transfer the readings to your shutter and lens manually.

Most cameras cease to give accurate exposures at temperatures in the vicinity of —30°F. due to thickening of the lubricants, thereby slowing the shutter and diaphragm which over exposes the film. Add to this the fact that bright snow landscapes tend to be overexposed and you could have a lot of washed out photos. The only way to be sure your camera will operate properly at sub-zero temperatures is to have a repair man "winterize" it by removing the lubricants. Then upon returning to warmer climates it must be re-lubricated.

Film becomes very brittle in cold weather and should be handled, wound, and rewound very carefully to prevent breakage or static electricity marks.

After all these hazards you might be scared to venture outdoors with your valuable camera except in the very best of weather. Actually the best pictures are made under severe weather conditions, so don't leave your camera on the shelf during so called "bad" weather. With good common sense care you can bring a camera through it in good shape. "Bad" weather is good weather for duck hunters and photographers. ▲▼

BLUE TROUT

by Ed Pearce

LET'S face it: not many fresh water trout anglers are lucky enough or sufficiently skilled to bring home many fish over 1½ pounds or 14 inches long. Not that they don't try; they do, but most of the time must be content with smaller trout. In most streams, the larger trout are either just not there or smarter than the angler. The fisherman is still entitled to the best meal he can get from what he does catch. After all, they did call for an expenditure of time, effort and money.

Even as you, I've prepared all sizes of trout cooked in many ways; fried, broiled, barbecued, steamed, baked and sauteed. Some I liked, others I didn't. But since I've found still another way to prepare small trout, a new zest has been added to my fishing and camping trips.

I now actually prefer to catch these smaller trout. Here's why.

While serving a stretch in the Army in West Germany, I fished with a friend, Johnny Slora, for trout near Murnau, a small village nestled at the foot of the Alps. The spring run-off of melting snows made the streams ice-cold, and they were teeming with the native browns and transplanted rainbows.

We soon filled our creels and returned to the small **gasthaus** (hotel) where we were staying, only to find that the noon meal was over. The wife of the hotel owner graciously offered to cook our trout, but warned us that we must accept her way of cooking. She looked into our creels, selected only the small trout and added that she hoped we would invite both she and her husband to the meal. This we quickly agreed to.

First, she washed and dried a dozen small, new potatoes, covered them with water in a pot, and put in a teaspoonful of salt, some thyme and put them on to boil. Seeing the trout had been drawn, she dried each with a towel, snipped off the fins and laid them aside. She neither washed nor scaled them.

Here is her recipe.

Blue Trout

1 cup white vinegar
8 tblsp. wine vinegar
Juice of two lemons
2 qt. water
2 tsp. salt
2 bay leaves
2 cloves
6 peppercorns
1 medium onion chopped
2 carrots chopped
1 bch. celery hearts chopped
8 fresh trout (small)

Combine all ingredients except the trout in a four-quart dutch oven and bring to a boil. Reduce heat and simmer 30 minutes. Strain the mixture through cheesecloth or a colander. Bring the mixture again to a boil and drop in the trout. Simmer, uncovered, until the trout turns blue and flakes easily — eight to ten minutes. Remove from the mixture, coat the trout with butter and serve with buttered boiled potatoes, hard-crusted bread and beer.

The German **hausfrau** was right, we now prefer this way of cooking small trout.

PHOTO BY JACK DERMID

One secret to good-eating trout, no matter how they're cooked, is to clean them soon after they are caught and cook them soon after they're cleaned.

Can you adapt it to field or camp cooking? You bet you can, it's great for campers.

It makes little difference whether you have rainbow, brook or brown trout, it has worked well for me on the banks of the Chattahoochee in northern Georgia, on the Little Tennessee, on Pennsylvania and North Carolina streams.

Here are a few helpful hints.

Take a four-quart cast aluminum dutch oven, a two-quart pot and a wire grill. I use the one from my Weber outdoor cooker; it's sturdy anl large enough to hold both pots. Before leaving on your camping or fishing trip, make the two quarts of mixture (stock) called for in the foregoing recipe. Bottle it tightly in two quart bottles and place them in the ice chest with the beer and butter. Pack the salt, thyme and bread in the four-quart oven. Wash and dry the small, new potatoes and pack them in the smaller pot. Place the tops of both pots on and tape them with heavy tape.

When you're ready to cook, place a log on either side of the fire and straddle them with the grill.

Cover the potatoes in the smaller pot with water, add salt and a bit of thyme and put them on one side of the grill to boil. Draw the trout, snip off the fins and dry them.

Pour the two quarts of stock into the four-quart oven, and place it on the other side of the grill. When it comes to a boil, drop in the trout and simmer, uncovered, until the trout turns blue — eight to ten minutes. When they flake easily, take them out and coat them with butter and serve.

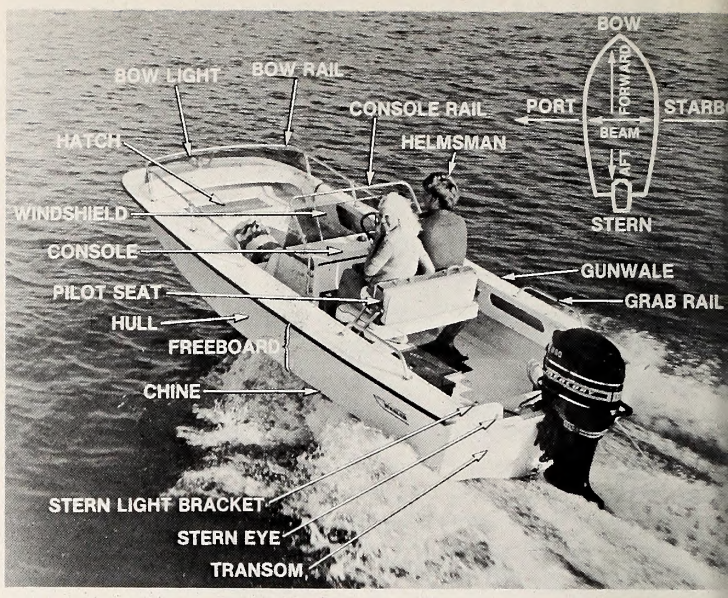
Rebottle the mixture after it has cooled, and ice it; it'll retain its strength and can be reused several times.

You'll be more than repaid for your efforts put forth in this type of cooking small trout by the compliments of your family and fishing friends. Your own satisfaction with the delicate and distinctive flavor of the trout won't soon be forgotten.

Do as I do now, go after the smaller trout. Use small lures, you're nearly always assured of catching enough small ones to provide this kind of feast. ⬍

Stem to Stern

BY ED JENKINS



BOATMEN have a language all their own. It is not difficult to learn, and many of the nautical terms are rich in history and tradition with humorous backgrounds on their origination and use.

A **sheet** is no longer something rectangular in shape that goes on a bed. It is a line used to control a sail's angle to the wind.

It may be known as a wall ashore, but it is called a **bulkhead** on the water.

A painter on shore may be one who spreads a thick liquid with a brush, but on the water a **painter** is a line attached to the bow of a boat used for making her fast.

If the rolling and bobbing of a boat on the water send you scurrying for a restroom, remember it is now referred to as a **head!**

The following condensed glossary of boating terms may be helpful in understanding the nautical lingo.

Abaft — Toward the stern

Abeam — Amidship, at a right angle to the keel

Aboard — On, in, or into a boat

Afloat — On the water

Aft — Toward the stern of a boat

Aground — Touching the bottom

Amidships — The middle of a boat

Anchor — A heavy forging or casting so shaped as to grip the sea bottom and, by means of a cable or rope, hold a boat in a desired position

Astern — Toward the stern. An object that is aft of a boat is said to be astern of the boat

Athwart — Across

Aye — **Yes** while aboard a boat or ship
Means **I understand**

Bail — To remove water from a boat by pump or bailer

Ballast — Heavy material such as iron, lead, or stone placed in the bottom of the hold, to keep a vessel steady

Beacon — A post or buoy placed over the shoal or bank to warn vessels of danger, also a signal mark on land

Bearing — The direction or point of the compass in which an object is seen

Belay — To make fast to a cleat or belaying pin, also to cancel an order

Below — Beneath, or under, the deck. One goes below when going down into the cabin

Bend — To fasten by means of a bend or knot

Bilge — The lower internal part of a boat's hull, adjacent to the kellson

Bollard — A strong post for holding lines fast

Bow — The forward part of a boat

Bulkhead — Vertical partition in a boat

Calking; Caulking — Forcing a quantity of material into the seams of the planks in a boat's deck or sides, to make them watertight

Camber — The arch of a deck, sloping downward from the center toward the sides

Cardinal Point — The four main points of a compass

Carvel — A system of planking in which the outside planking of a boat is flush. The edges meet, giving the shell a smooth surface

Chart — A map of a body of water that contains necessary piloting information

Cleat — A piece of wood or metal with projecting ends to which lines are made fast

Clinker — A method of planking in which the lower edge of each strake overlaps the upper edge of the strake next below. (Also called Lapstrake)

Cockpit — A well or sunken space in the afterdeck of a small boat for the use of a helmsman and crew

Come About — A sailboat changing direction by bringing its bow through the wind

Compass — The instrument which shows the course of a vessel

Course — Direction steered by a vessel

Current — The movement of the water in a horizontal direction

Deck — On a vessel corresponds to the floor of a building on land

Dinghy — A small open boat

Draft — The depth of the vessel below the water line, measured vertically to the lowest part of the hull

Dry Rot — A fungus decay which causes wood to become brittle and to fall apart

Ebb — The reflex of the tide

Fast — Snugly secured; said of a line when it is fastened securely

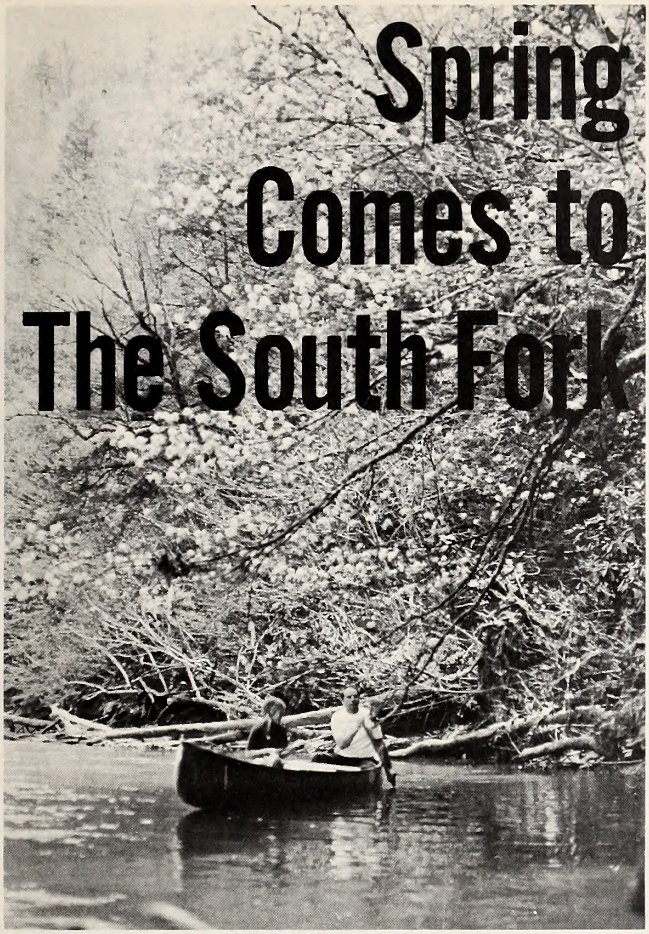
Fathom — Six feet; a measure of depth

Fenders — Objects placed along the side of the boat to protect the hull from chafing

Flare — The outward spread of the boat's sides from the waterline to the rail at the bow

Fore — Used to distinguish the forward part of a boat or things forward of amidships. It is the opposite to aft or after

• **continued on page 26**



Spring Comes to The South Fork

by R. L. (Rip) Collins
Blowing Rock

When the **sarvis** blooms and tender green leaves unfold to the size of a squirrel's ear, winter is making its long delayed retreat from the blue ridges above South Fork of New River. By tradition the flowering service berry marks corn planting time for Watauga and Ashe county farmers along this sparkling stream. It is a time when the fishing fever rises like sap and the plow is likely to be forsaken for fishing gear as anglers try the river for the early spring smallmouth bass.

The service berry is a natural thermometer for the Carolina farmer and fisherman alike. Down east its the **shad bush,** smaller but a service berry like the sarvis, which announces the shad run on the coastal rivers. As spring moves across the state from the lowlands, the reawakening of this tree indicates that the earth is ready to receive seeds and that water temperatures have risen upward toward 60 degrees.

It is late April in the highlands before the waters warm sufficiently for good fishing on the South Fork of the New. This shallow, surprisingly easy flowing mountain waterway is formed by three forks at the edge of Boone and it meanders gently through lush green woods and pastureland 50 miles before it meets the North Fork, creating New River itself just south of the Virginia state line. From North Carolina this pastoral river flows northward into Virginia and West Virginia finally turning south into the Gulf of Mexico only after it has been swallowed by the Mississippi.

I've canoed the South Fork and roamed its woods for years. Once its waters have warmed, I've seen tourists and natives alike fishing here in fog, wind even rain, and generally, it appears the water temperature is more important than any of the immediate weather conditions. One knowledgeable old timer with a twinkle in his eye confided to me that, "Weather conditions have less effect on the bass than on the bass fisherman."

Whatever the weather conditions, the largest fish and the longest strings belong to the anglers using natural bait. The minnow fisherman and those who use small crayfish, salamanders and night crawlers stand out among the successful ones we have observed over the years; but for my money the real sport on South Fork is drifting and fishing with small spinners and flies. Surely, once you have had the experience of float fishing this stream you, like me, had rather be fishing than chasing bait.

Many local anglers float the river on homemade, flat bottom dinghys that they refer to as **jon-boats.** Frequently, as you drift, you will see these heavy little wooden boats chained along the banks. Less often you will see anglers floating in a rubber raft. South Fork is accessible from a number of places where local, gravel roads cross the river on quaint, low water bridges built with an upstream tilt to permit water to pass over them in flood season. These bridges form the only obstruction to continuous drift fishing or canoeing but they also are ideal places to launch or take out your craft. A canoe is obviously easier than a boat to carry across the bridges. For this reason and because of its quietness and easy maneuverability, I long ago settled on a canoe for the run. I prefer a 16

Shown above is a low water bridge where canoes are easily launched. Such access is a virtue that is partially offset by the fact that these bridges hinder continuous drifting downstream. A pleasant problem is "where to cast next," when all the water looks good.

foot fiberglass craft, for this length can be managed by one person, but it is also adequate for two with their overnight gear.

One of my favorite stretches on the Fork begins at a low water bridge just above Fleetwood Post Office in Ashe County. Fleetwood is on Highway 221 between the hamlet of Deep Gap and the town of West Jefferson. From here I can drift 10 scenic miles and take my canoe out just above Daniel's Daughter development within sight of Highway 163, that connects West Jefferson to Highway 16 west of the Blue Ridge Parkway.

A serious canoeist will cover this stretch in four or five hours canoe time. But a dedicated fisherman, who really wants to try for the adventuresome smallmouth bass, should allow all day for this trip. Most drifters seem content with the same 9 to 5 routine that covers a regular working day. But, if you really have fishing fever, you will arrive at the river just at dawn and have your canoe gliding downstream as the grayness rises from the water. The exhilaration of the early dawn on such a beautiful stream will pay dividends for your slight extra effort and small loss of sleep.

To the fisherman acquainted with largemouth lake bass habitat, the first time on this prime river water may be puzzling. The drowned timber, the submerged weed beds, the reedy shallows and the lily pads are non-existent and you may say to yourself that nothing looks 'bassy! But soon you will learn that the rock wall beneath the jumble of fallen boulders where shale shows underwater, the submerged stairstep rock ledges and the gravel rock points all indicate classic habitat for river bass.

At first you may be tempted to keep your spinning rig in constant motion. But within a short distance you'll find you have opportunity to be selective in your choice of water. You'll find the most action in the deeper pools at the foot of the riffles. An ideal smallmouth bass river might be 75 percent riffles and 25 percent pools. The Fork is about 50-50 with some pools stretching away into lengthy flat water.

The movement of the current will give you some measure of smallmouth locale. They don't as a rule, lie in the current itself; most likely they will be in the lee of a rock or beside it.

As you drift, you'll welcome the faster riffles for two reasons: first, you'll enjoy the gliding smoothness of your canoe, and secondly, you'll be maneuvering your light craft quietly into position for a cast where the elusive smallmouth bass is cautiously waiting. As you get the feel of the river, you'll seek out pieces of cover shade by overhanging trees and let your lure search out the deep spots below the rock wall where the current is blunted and food swirls into the basses' natural feeding ground. In these places you may let your spinner bounce off the rock and splash into the water in the pool below.

With the smallmouth you'll have success with small, fairly heavy spinning lures such as a **No. 2 Mepps,** or a **Harrison Panther Martin,** with perhaps a pork rind streamer. These lures tend to run deep at the same time they are being retrieved rapidly. A **Heddon's Midget Didget** brings much the same action.

Colorful streamers of hair or hackle, bugs or conventional wet and dry flies usually reserved for trout will give you a bonus when it comes to fishing the Fork. The natural flow of the water provides movement for such flies and you need not be an expert fly fisherman to make these lures tempting to the smallmouth. While trying for the bass, you may be delighted to discover with these lures you may take many good sized trout. You might hook a native brown, but there is an even better chance you'll get a rainbow that has been washed down from a number of stocked streams which feed into the river.

As you drift and fish, make a point of trying those holes where the water flows into the river from the smaller, colder streams. In these places a weighted **Tellico Nymph,** fished about two feet below a small plastic bubble will often yield you a sizeable trout.

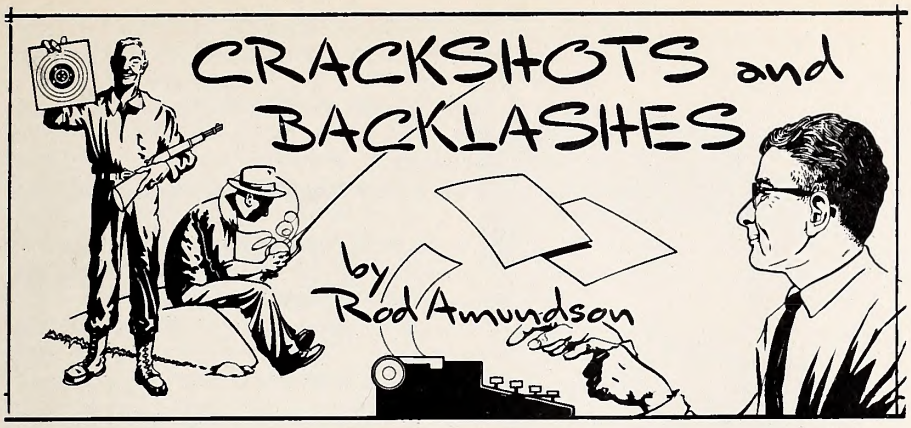
But, even on days when fishing is unproductive, drifting South Fork of New River is reward enough. You'll savor the beauty of one of North Carolina's last remaining free running mountain rivers. Relatively free from pollution and industrial development, the lower section of the New has been approved by the State and submitted to the Department of Interior for classification as a **Scenic River.** The entire length of the South Fork has been under study for some time for a similar designation. Such a classification may save its pristine waters from being inundated by another impoundment.

A free running South Fork is a heritage worth saving. Not just for you and me, but for our children and our children's children. Not just for the fisherman but for all who enjoy the beauty of its banks and the rhythm of its current. For this is a stream which scores of people float simply to enjoy its beauty and solitude and never wet a fishing line.

From the time the **sarvis** blooms to start the colorful parade of flowers, its banks are a procession of brilliant flame azaleas in May, delicate laurel and rhododendrons in June, small flowers of a cool summer and masses of gold in early fall. Even in winter when snow whitens its banks and ice glistens in the current, it is a magnificent sight to behold.

When you have experienced the South Fork of New River you may, like me, have a difficult time deciding which season you like it best. And if you fish it with some success you may decide to try it even before the **Sarvis** blooms. You might disagree with me on the proposition of using a canoe rather than a rubber raft or small boat, or on the matter of using artificial rather than natural bait. But of one thing I am sure—you won't disagree with me that New River and its South Fork are singular and beautiful. ▲▼

You may not relax quite this completely, but you certainly can take life at your own pace, on a float trip down the South Fork of the New River in the spring. Let's hope that such rivers are with us always.



Denison Olmstead, Professor of Chemistry and Mineralogy, University of North Carolina, included the following thoughts in his Report of the Board of Agriculture in 1824 of the Geology of North Carolina.

"Those whose observations have been confined to a country abounding with forests, will be surprised to learn that nearly all the fuel of the most populous countries in the world is dug out of the bowels of the earth. This subject has an intrinsic importance, therefore, of which probably but a few among us are aware. In illustration of this point, we offer the following considerations."

"Every State in a stage of progressive improvement, although at present supplied with abundant resources for fuel in her native forests, must look forward to a period when these resources will be either partially or wholly exhausted. Some countries still extensively covered with forests, are exhausted in spots by the demands of large and populous cities, or of certain manufactures, which require enormous supplies of fuel. Pittsburg, in Pennsylvania, though situated in a region which was but a few years since an unbroken wilderness, affords at present an illustration in point; for her neighboring forests were long since cut down, and were it not for her coal mines, she would now find it impossible to carry on those great manufactures which constitute the basis of her affluence."

"....., therefore, we may look around us and see apparently an exhaustless supply of fuel in our forests, yet the time may not be distant when some large manufacturing establishment shall call loudly for Coal; and perchance in no very distant age, the domestic wants of some portion of our citizens may make them look for this article with very different feelings from any that influence the present generation."

W. L. Hamnett
Director Emeritus
N.C.S.M.

Belews Lake

A note from a Pine Hall, N. C. reader tells us that Belews Lake is actually closer to Pine Hall than it is to Stokesdale, as might have been indicated in the article about the Lake in our April issue. He also sent us a Duke Power folder about the Lake which has a fine map of the area. This folder is available from Duke Power, 422 S. Church St., Charlotte, N. C. 28202.

Bird Feeding

Dear Sir:

I read with much pleasure "Bird Feeding — You Decide," by Paul Koepke. My experience persuades me he is right when he says that feeding birds does not substantially interfere with their pursuit of natural foods and that they do not forget their historic foods and how to get it.

Some 18 years ago, a friend and I built a 70 acre lake and recreation homes in the top of Red Mountain 22 miles NE of Birmingham, Alabama. We prohibited hunting on the 1,000 acres of wooded mountain we owned around the lake and raised a dozen free-winged mallards hoping they would attract wild ducks. By keeping cracked corn available at all times and making our "welfare state" in other ways attractive, we kept a flock of 8 to 25 mallards on the lake year-round. Slowly over the years, a few wild wood ducks became year-round residents, and a few widgeons, grebe, and coot winter residents, and they in turn after ten years began to attract many varieties of noncorn eaters who would stay with us for a day or so up to several weeks. Our lake perhaps gradually got a reputation in duck circles as a safe retreat. Before I get to our bird experience, I would make the point that our half-tame ducks ate four to five times as much corn during the three coldest winter months as they did during the summer when much natural food was available. Thus they reverted to their natural diet when it was available although their feeding station was always supplied with cracked corn.

Similarly for the birds from the beginning, we set up a cracked corn feeder and a separate suet feeder, with little to show for our efforts for a year or two.

Before the lake filled up and for months thereafter we saw very few birds. Either they were too wild to come near the house or there were very few in the woods. We rather think it was the latter as before the lake, the soil was very poor and the rains that fell ran off rapidly leaving the woods quite dry and little standing water. But with the coming of the lake, and the fogs and mists it created, the whole ecology changed from dry to damp and new plants begun to appear and the balance of bird and animal life changed. (Sad to say the predators increased to where the mallards who had once hatched 150 to 200 young a year, and successfully raised a dozen or two, no longer completed a nesting.)

After a year of feeding only a few white-throated sparrows and junkos; a pair of cardinals found our feeders and multiplied tremendously over the years. Apparently our forest birds did not know what suet was for it was nearly three years before a curious titmouse took a peck. As other birds learned from the timouse and the cardinals, our problems were over and practically all birds native to our area now, particularly in winter, present a constant stream to our two feeders and many of them raid the duck feeder as well.

But as in the case of the ducks, once the young are on their own and summer is in full swing, most of our birds find their natural foods more interesting and our consumption of corn and our bird visitors fall off to at least a third. But most interestingly our always stocked suet feeder, which all day during the hard part of the winter has a bird or two feeding, and two or three on standby on nearby branches, now in the mid- and late-sum-

STEM TO STERN

• continued from page 22

Frame — Ribs of the hull, extending from the keel to the highest continuous deck

Freeboard — The vertical distance measured on a boat's side admidships from the waterline to the gunwale. On larger vessels it is measured to the Freeboard deck

Galley — That place where the cooking is done

Gunwale — The upper edge of a boat's side (Pronounced gunnel)

Halyard — A line to hoist a sail, flag or signal

Hatch — An opening in a boat's deck to allow persons or cargo to go below

Head — A marine toilet

Helm — The wheel or tiller by which a ship is steered

Hull — The body of a boat

Jibe — A sailboat changing directions by bringing stern through the wind. Can be dangerous

Keel — The main center-line structural member, running fore and aft along the bottom of a boat (The backbone of a boat)

Knot — To bend a line. Also a unit of speed equal to one nautical mile (6,076.10 feet) an hour

Leeward — Situated on the side turned away from the wind. (Opposite of windward)

Line — A rope once it is brought aboard a boat

List — Leaning or inclining of a vessel toward the side

Main — In all vessels it applies to the principal mast and sail

Mizzen-Mast — The aftermost mast of a ship

Mooring — Commonly, the anchor, chain, buoy, pennant, etcetera, by which a boat is permanently anchored in one location

Overhead — Equivalent to the ceiling of a house

Painter — A rope attached to the bow of a boat used for making her fast

Pitch — The fore or aft movement as the bow and stern rise and fall due to wave action

Port — The left side of a boat when you are facing forward

Roll — The sideward motion of a boat caused by wind and waves

Rudder — A device used for steering and maneuvering, usually flat sheet metal attached to a stern or rudder post

Rules of the Road — Regulations for preventing collisions at sea

Screw — the propeller

Scupper — A hole which allows water to run off the deck

Sheet — A line to control a sail's angle to the wind

Spinnaker — A light sail of great spread used on yachts when running after the wind

Starboard — The right side of a boat when you are facing forward.

Stern — The after end of a boat

Stow — To pack the cargo

Superstructure — That portion of the boat above the main deck

Tack — Maneuver that enables sailboats to run a zigzag course into the wind

Thwart — A seat extending across a boat

Tide — The alternate rise and fall of waters caused by the gravitational attraction of moon and sun

Tiller — A bar or handle for turning a boat's rudder or an outboard motor

Transom — The tranverse planking which forms the afterend of a small square-ended boat (Outboard motors are usually attached to transom)

Trim — To arrange weights in a vessel in such manner as to obtain desired draft at bow and stern

Unbend — To cart-off or untie

Wake — Moving waves, track or path that a boat leaves behind it, when moving across the waters

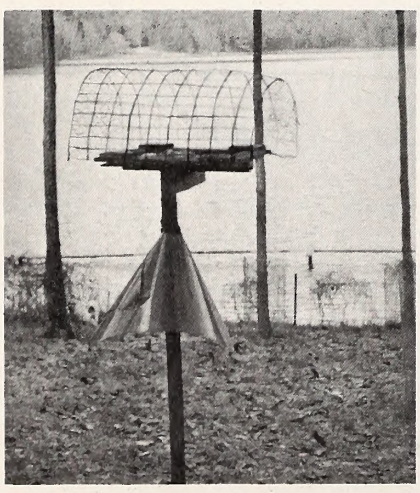
Waterline — Point to which a vessel sinks in water; line painted on hull showing point to which vessel sinks in water when properly trimmed

Way — Movement of a vessel through the water. Technically she is underway when not at anchor, aground or made fast to the shore. The common usage is interpreted as progress through the water: **Headway** when going forward and **Sternway** when she is going backwards or astern

Windward — Toward the wind

Yaw — Sideways movement of a boat caused by a strong following sea

---



This feeder, constructed by Mr. Reese, shows a penciled-in wire framework which protects the contents of the tray from crows, yet allows small birds complete access.

mer will often not have a single customer all day. And the suet, which because it spoils in the hot weather must be changed every day or so, is almost totally wasted. We keep the suet out, however, during this period on the theory that we do not want to retrain our birds to where and what it is. This observed behavior convinces me that in the main birds prefer their natural foods and merely supplement it at our feeders when it is not available or is hard to find in sufficient quantities.

Sincerely,
Louie Reese
Birmingham, Ala.

Interesting Book

For many years the Board of Commissioners of the Hamilton County (Ohio) Park District has received requests from citizens who have enjoyed reading monthly issues of the Park District News to publish a complete collection of the feature articles on natural history.

The Park District Commissioners have published such a book entitled *"A New Look at Some Old Things,"* which includes all of the natural history articles appearing in the Park District News for the past 18 years.

Written by Park District Naturalist, Warren R. Wells, these articles represent a unique contribution to the current literature available on local natural history, conservation of natural resources, ecology, and presentation of the invironment. The book should be of particular interest to teachers, outdoor education leaders, conserva-

tionists, natural history buffs, camp counselors, and sportsmen.

Written in an inimitable warm and friendly style, the book includes a touch of "wilderness wisdom" not found elsewhere. I am sure you agree it would be a welcome addition to the educator's library, both as a reference and as a teaching aid.

Park District Commissioners will place proceeds from the sale of the book in the Park District's Land Acquisition Fund. The money will then be used solely for the purchase of additional open space for future Park District Parks.

The book costs $2.50 and can be purchased at the Park District Office, 10245 Winton Road, Cincinnati, Ohio 45231. Citizens wishing to support the Park District's Land Acquisition Fund could sell the book as a special project; for orders of 20 or more copies, the book can be sold to you for $2.00 a copy. For more information call the Park District Office at 513-521-9866.

KNOW YOUR PROTECTOR

Milton McLean

Wildlife Protector Milton S. McLean is a graduate of Bladenboro High School, and served in the U. S. Army from September 1967 through September 1969. He was stationed in Viet Nam for 12 months serving with the 101 Air Borne Division, Camp Eagle.

Milton completed the Wildlife Protectors' Recruit School in March 1970, and was stationed at Jacksonville as a trainee in July of 1970. He has since attended four In-service Training Schools, totaling 16 weeks of classroom and field exercises at the Institute of Government at Chapel Hill. August 1, 1970 Protector McLean was stationed at Bolton, N. C. and his area of responsibilty includes Green Swamp and Lake Waccamaw.

He enjoys hunting and fishing and trapping. McLean is a member of the Southeastern Association of Game and Fish Commissioners, Law Enforcement Section, the N. C. Association of Wildlife Law Enforcement officers, and the Fur Takers of America.

Mr. McLean is married to the former Brenda Williamson of Clinton, N. C.

PLANT LIFE from page 13

of vascular plants. With both a river and a lake in the Park, one would normally expect a well-developed flora in these habitats. To facilitate boating and swimming, the lake is purposely filled with chemicals three to four times a year which prohibits growth of both plant and animal life. Thus, the plants which are found around this lake are usually restricted to the banks rather than in the water. One exception, the water milfoil is fairly abundant in the lake water.

The primary reason for a sparse flora in the Neuse River is due to the swift current of the river, limiting the opportunity for vascular plants to become established. Common rush, water smartweed, arrow-leaved tear-thumb, inland sea oats, and spotted touch-me-not are the main plants observed on the edges of these habitats.

As indicated by the above description, the flora of the Cliffs of the Neuse State Park is represented by a diverse group of species. A total of 422 different vascular plant species have been collected and identified. These species represent 93 different families. In addition to the diversity of habitats and the unusual scenic value afforded by the cliffs, the Division of Parks and Recreation has developed facilities for camping, swimming, picnicking, hiking, and museum study. Write for information on Cliffs of Neuse at Dept. of N.E.R., Div. of Parks & Recreation, P.O. Box 27687, Raleigh, N. C. 27611.

ADDRESS CHANGE NOTIFICATION

Name_____

Old Address_____

_____

_____

New Address_____

_____

_____

Zip Code_____

IMPORTANT:

Enclose present Address Label

Please notify us promptly of change of address.

Use this blank to subscribe NOW — $2.00 a year

Add $1.00 for overseas postage

No stamps, please

WILDLIFE IN NORTH CAROLINA **New** ☐

325 N. Salisbury St., Raleigh, N. C. 27611 **Renewal** ☐

I enclose $_____; send me WILDLIFE IN NORTH CAROLINA for_____years starting with the earliest possible issue.

Name_____

Street or Route_____

City_____ State_____ Zip Code_____

Due to rising production and printing costs and likelihood of periodic increases in the subscription price for WILDLIFE, a limit of FIVE YEARS is being placed on new and renewed subscriptions.

PHOTO BY W. T. BRYSON

Spring Forest

A spring forest with its dark green carpet sprinkled with delicate wild flowers forms an inviting setting for a May afternoon. Treat it gently, please.

STATLIBR* 1SAMPLE9999
DIV OF STATE LIBRARY
109 E JONES ST
RALEIGH NC 27611

LITHO BY THE GRAPHIC PRESS, INC., RALEIGH, N. C.

NER
C45
7: 39/6

Wildlife

IN NORTH CAROLINA

JUNE 1975

North Carolina State Library
Raleigh

PHOTO BY JOEL ARRINGTON

LEAST TERN

A little bit of sand and seclusion is about all the least tern needs for its nest. Mid-June seems to mark the peak of the nesting season along our coast for this bird which stays with us for the summer.

STATE OF NORTH CAROLINA

JAMES E. HOLSHOUSER, JR.
GOVERNOR

DEPARTMENT OF
NATURAL AND ECONOMIC RESOURCES
JAMES E. HARRINGTON, JR.
SECRETARY

NORTH CAROLINA
WILDLIFE RESOURCES COMMISSION

ROSCOE D. SANDLIN, CHM. _ JACKSONVILLE
JAY WAGGONER, V. CHM. _ _ _ _ GRAHAM
ROY A. HUNEYCUTT, SECY. _ _ _ _ LOCUST
W. K. ANDERSON _ _ _ _ _ _ _ NEWLAND
WALLACE E. CASE _ _ _ _ HENDERSONVILLE
D. JACK HOOKS _ _ _ _ _ _ _ WHITEVILLE
DR. LATHAN T MOOSE _ _ WINSTON-SALEM
V. E. WILSON, III _ _ _ _ _ _ _ ROCKY MT.
ORVILLE L. WOODHOUSE _ _ _ _ _ GRANDY

CLYDE P. PATTON
EXECUTIVE DIRECTOR

EUGENE E. SCHWALL ROBERT B. HAZEL
ASSISTANT EXECUTIVE DIRECTORS

DIVISION CHIEFS

REX GARY SCHMIDT _ _ _ _ _ _ EDUCATION
RICHARD B. HAMILTON _ _ _ _ _ _ _ GAME
W. DONALD BAKER _ _ _ INLAND FISHERIES
DONALD E. CURTIS _ _ _ _ _ PROTECTION
CHARLES R. FULLWOOD, JR. _ MOTORBOATS
AND WATER SAFETY

The Editor gratefully receives for publication news items, articles, and photographs dealing with the North Carolina out-of-doors, but reserves the right to reject materials submitted. Full credit is given for all materials published.

Have you moved recently? Change your address promptly. Either send in an old mailing label from your magazine along with new address or type or print complete old label information exactly as it appears on your magazine.

WILDLIFE IN NORTH CAROLINA is published at the Wildlife Resources Commission offices, Albemarle Building, Raleigh, N. C.

Phone Number AC 919/829-7123

AN EQUAL OPPORTUNITY EMPLOYER

Second class postage paid at Raleigh, North Carolina 27611.

* * *

SUBSCRIPTION RATE—$2.00 per year (12 issues). Add $1.00 for overseas postage except APO, Canada and U. S. possessions. Back issues —$.25 per copy plus $1.00 minimum for handling and mailing; back issues may not be available. Send check or M. O. payable to WILDLIFE RESOURCES COMMISSION. Stamps cannot be accepted. Any employee of the Wildlife Resources Commission may accept subscriptions, or send to WILDLIFE, Albemarle Building, 325 N. Salisbury Street, Raleigh, N. C. 27611.

Wildlife circulation this issue 80,069

Wildlife IN NORTH CAROLINA

The official publication of the NORTH CAROLINA WILDLIFE RESOURCES COMMISSION, Raleigh 27611. A monthly magazine devoted to the protection and restoration of our wildlife resources and to the improvement of hunting and fishing in North Carolina.

VOL. XXXIX NO. 6 JUNE, 1975

IN THIS ISSUE

The Eastern Crow
by Rod Amundson ..... Page 4
Saltwater Fishing Holes
by James R. Reedy, Jr. ..... Page 6
The Coastal Management Act
by John Crew ..... Page 8
Resource-O-Gram ..... Page 10
Bass Fishing
by Jim Dean ..... Page 11
Cook Frog Legs
by Bernadette Hoyle ..... Page 12
Eastern Meadowlark
by Grace S. Draper ..... Page 13
Paddle Your Way to Adventure (3)
by L. S. Lane ..... Page 14
Safer Hunters
by Gwen A. White ..... Page 16
Moonlighting for Rock
by Gerald Almy ..... Page 18
Stem to Stern
by Ed Jenkins ..... Page 21
Human Vs. Woodpecker
by M. Dale Arvey ..... Page 22
Out of The Past ..... Page 23
Look and See
by Ches Crow ..... Page 24
Crackshots and Backlashes
by Rod Amundson ..... Page 25
Road Kill
by Don Causey ..... Page 26

EDITORIAL STAFF

DUANE RAVER _ _ _ _ _ _ _ _ _ _ EDITOR
LUTHER PARTIN _ _ WRITER-PHOTOGRAPHER
JIM DEAN _ _ _ _ WRITER-PHOTOGRAPHER
TED DOSSETT _ _ _ WRITER-PHOTOGRAPHER
ROD AMUNDSON _ _ CONTRIBUTING EDITOR

An objective of all levels of government should be to achieve and sustain a balance of the social, ecological, and economic benefits derived from natural resources. Without such balance none of the factors on the scale will be worth weighing.

There's something about June and largemouth bass that seem to go together. Better fishing may occur in early spring, but a balmy June morning is hard to beat as a fine time to flip a popping bug. The bass, with the local names of chub and trout in eastern North Carolina, is a great game fish wherever he's found. The one on our cover may be jumping just for the joy of being alive; or maybe he missed your popping bug. Better cast again. Painting by Duane Raver.

THE EASTERN CROW

by Rod Amundson

Saint or Sinner This Smart Bird Is Part of Our Wildlife Scene

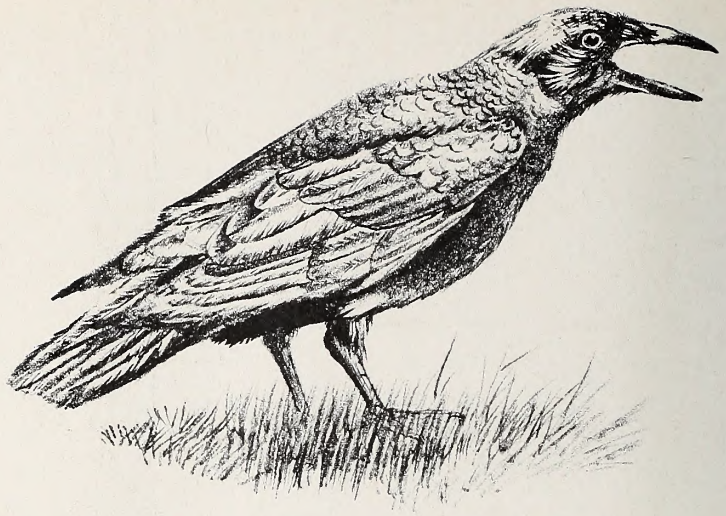


ILLUSTRATION BY JOYCE RHAMES

AFTER generations of persecution, slaughter, invective, and a great deal of misunderstanding, the common crow has finally attained legal status among wildlife species, and is given at least a degree of protection.

In 1972 the U.S. Department of the Interior added the common crow to the list of migratory birds under federal protection. This was done under authority of the Migratory Bird Treaty Act of July 3, 1918. The treaty is an agreement among the United States, Canada, and Mexico designed to protect birds considered to be beneficial to mankind in one way or another. Whether the common crow **(Corvus brachyrhynchos)** is beneficial to mankind is a moot question; but this would be a less interesting world if crows and other members of the Corvidae family were not in it.

North Carolina is blessed (or cursed, depending on your point of view or prejudice) with three species of crows. These include ravens that live in the higher slopes of the mountains, the common crow of statewide distribution, and the fish crow indigenous to the coastal regions.

Under federal regulations (which are to be enforced by the states) crows may be hunted no more than 124 days during a calendar year, never during the peak of the breeding season. They may not be hunted with the use of aircraft and may be taken only with the use of firearms, and archery equipment. Crow hunting is not permitted in Alaska or Hawaii.

Crows are members of a large family that includes bluejays and other jays, magpies, and the Old World Jackdaw. They are of wide global distribution, occurring in all habitable parts of the world except New Zealand.

History

A thief, a scoundrel, pirate, marauder, scavenger, raucous-voiced despoiler of duck nests—these are but a few of the printable adjectives ascribed to the crow. He is a clown, a mimic, a tormentor, and a tender, loving parent. In addition to this and more, he is one of the smartest of birds, ranking high in intelligence and physical development. One of the most universally hated and persecuted of birds, the crow has followed mankind throughout the limits of agriculture, and has held his own in number despite massed gunfire, bombing, and poison.

One cannot help admiring such a bird even though it steals corn, chickens, rob birds nests, then sits at a safe distance in a tree top and literally laughs at the whole affair. Farmers hate crows. Sportsmen pretend to, but if crows were ever reduced to danger of extinction, you would hear a loud outcry from crow hunters for the protection of a favored sport. Here is an indication of the trend toward the conservation of crows.

Near the town of Hastings, Nebraska, was a tract of woodland that became famous as a mass roosting place of crows during the cold winter months. Estimates of the number of crows frequenting the rookery ranged up to half a million birds. Soon after World War II when shotgun ammunition again became plentiful, hundreds of sportsmen made nocturnal raids on the roosts, killing crows by the thousands. Everyone had a good time until the crows began avoiding the woodland tract and looking for new places to roost. Then, by gentlemen's agreement, the crow shooters decided to no longer invade the crow roost. Instead they decided to do their shooting in the twilight hours as the crows flew into the roost from the surrounding countryside. Those crow hunters wanted to preserve their sport. There was some talk of a big limit, but this was never accomplished.

Characteristics

The common crow is a relatively large bird, about 20 inches long, with a corresponding wingspread. The general appearance is a solid black, although in winter plumage the black becomes irridescent violet over the wings and on the neck feathers. After the breeding season is over, the birds go through a complete moult, thus renewing the black and irridescent plumage from the worn, brownish hues of the summer.

To call the voice of crows a song would be stretching the most elastic imagination. Crows do, however, have a repertory of utterances which may vary with the situation. In flight the call is a simple, harsh "caw, caw, caw." But let a number of crows encounter a fox or a tomcat in the woods, and a clamor of caws,

Crow hunting is often done with an electronic device which plays records of various crow calls (these are not permitted on Game Lands). Lots of hunters also use wooden or plastic calls or their own voice.

shrieks, and cries is set up which can completely unnerve the harried animal. Hawks and owls are arch-enemies of crows, and any encounter between the two kinds of birds is sure to bring on a chorus of avian profanity.

Much has been written about the community life of crows, giving the birds credit for a great deal of intelligence. For example, while a flock of crows help themselves to sprouting corn in a farmer's field, one member of the flock is left on sentinel duty. At the approach of danger, the sentinel sets up a fuss that can be heard for miles. The flock then heads for the tall, deep woods.

Many a hunter will give his word that crows recognize guns when they see them, and there is considerable evidence to bear out this belief. You can ride on a piece of farm machinery all day, without a gun, and have crows come within a few feet of the cultivator to pick up insects and grubs. But take a gun along for the purpose of shooting a crow, and the birds will either leave the field or stay just out of gun range.

But crow intelligence is far from infallible. Hunters go out to a thicket or a prefabricated blind and call crows in to the gun until they are tired of shooting. A number of good artificial crow calls are on the market, and may be used with considerable success. Some crow hunters call the birds vocally. Either method can be hugely successful.

As Pets

Many a crow has been raised in captivity, to the delight and consternation of its benefactors. Young birds taken from the nest can easily be raised on nearly any food from the kitchen table. They seem to forget their ancestry, and will almost entirely ignore their wild cousins. But the person who takes on a crow for a pet is letting himself in for plenty of trouble. Crows are congenital thieves, and no object about the place is safe from the pet crow if it can be picked up and flown away with. Many a housewife has searched in vain for thimbles, scissors, hair ribbons, and a variety of bric-a-brac, only to learn that the crow has carried it off and hidden it.

If there is a pet cat or dog in the household, it might be well for the animal to make friends with the crow. Otherwise, it is in for a life of calculated torture. The daily life of a pet crow can be described in three words: eating, sleeping, and tormenting.

Because of their versatile voices, pet crows easily learn to say simple words. This, incidentally, can be accomplished without the cruel practice of splitting their tongues.

Breeding

Despite all of the invective heaped upon them, crows do an admirably conscientious job of rearing their young. Their domestic life is peaceful, and the devotion of parent birds to each other and to their young is remarkable.

Mating begins with a period of courtship during which several males seek the favor of a female. At this time the males do considerable showing off in aerial acrobatics and in sounding love calls. The latter is definitely unattractive to the human ear, but apparently it serves the purpose for which it is intended among crows. Once a successful suitor has been selected, the pair drive off rivals and set about the task of housekeeping.

Crows construct elaborate nests, although they will sometimes take over the abandoned nests of squirrels or hawks. The nests are made of rather heavy twigs which are piled on top of each other until a considerable pile has been amassed. Much attention is given to lining the nest with dead leaves or tufts of cotton, twine, old rags, moss, or any other soft material. Altogether, the nest is substantial and warm.

From four to six greenish-gray, blotched, spotted, or mottled eggs are laid in the nest cavity. Occasionally two females share the same nest, and may put in as many as a dozen eggs. The incubation period is 18 days. The youngsters are particularly unlovely, being a semi-naked pinkish color with an indifferent array of gray down. Pinfeathers soon appear on the wings and tail, and in a very short time the fledglings are entirely feathered.

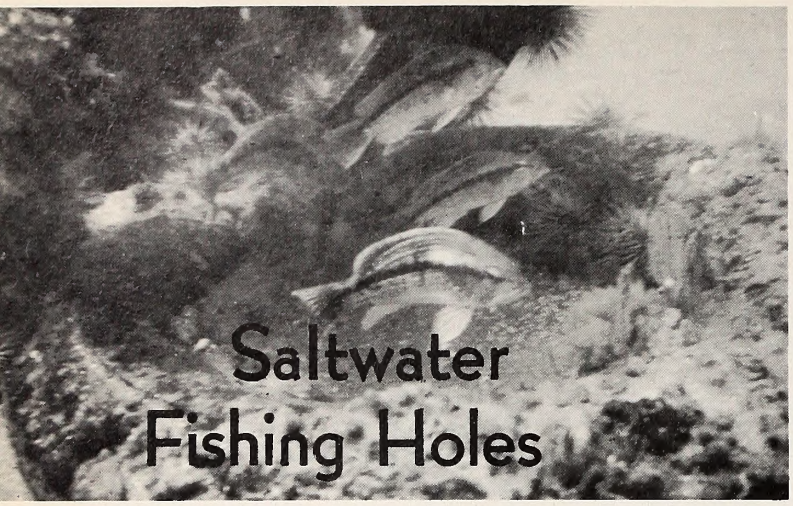
As soon as the young crows are old enough to take food, they set up a terrific clamor to obtain it. They never seem to get enough. The hunger cry is an oft-repeated, dry squawk, with a falling inflection. The din increases as the hard-working parents approach the nest with food, and continues in subdued choking, gobbling sounds as the food goes down. Young crows require about half their weight in food each day, and as they approach maturity, this imposes a heavy tax on the energies of their parents.

At the age of five weeks young crows are developed enough to make trial flights, but their demand for parental care goes on after they have learned to fly from tree to tree.

Food Habits

It is the food habits of crows that get them into trouble. They incur the ire of farmers by stealing baby chicks, growing corn, and corn in the milk stage. In the nesting grounds of ducks and geese, crows destroy countless eggs, and thus arouse the wrath of sportsmen. Where crows find quail and pheasants nests, they will eat the eggs. They have been known to plunder

• continued on page 27



Saltwater Fishing Holes

NAT'L. MARINE FISHERIES SERVICES

by James R. Reedy, Jr.
Morehead City

THE old ship swung lazily on her rusty anchor chain, moving to the whim of a light swell and mild breeze about two miles offshore. Crying gulls wheeled in a bright, cloudless sky as sunlight flashed on the water's ruffled surface. Suddenly huge clouds of smoke and flame erupted from the vessel's holds and a tremendous, shattering blast thundered across the water. Within minutes the tired old hulk, wheezing and groaning in protest, her bottom ripped apart by high explosives, had settled to the ocean floor. Her spectacular end was not the result of a wartime torpedo attack, nor was the explosion accidental. She was the first of three surplus liberty ships to be deliberately sunk in the new Artificial Reef Program of the North Carolina Fisheries Commission.

An artificial reef, for those who may not know it, is an underwater structure designed specifically to attract fish. Given time, any object sunk in the ocean becomes coated with invertebrate marine organisms and, if large enough, acquires a resident population of free-swimming creatures who feed on these encrustations. An artificial fishing reef follows that same principle, but it must meet other criteria as well. To be successful it must provide enough shelter that a number of small and medium-sized fish can escape predators and enough surface area to insure a constant food supply of encrusting organisms for foragers. Reef profile, or height above the surrounding ocean floor, is also necessary to attract larger pelagic species like jacks and kings. The object of any reef building effort is to supply these needs in areas where there is little or no habitable ocean bottom.

The main purpose of the Fisheries program is to put good saltwater angling within reach of the small boat fisherman. Since most suitable natural bottom is several miles offshore this means establishing reefs on the barren flats close to navigable inlets. Sportsmen can then enjoy good catches of ocean fish while still close enough to port for safety. Building on work started by a few private and local government groups, the State program has expanded some existing reefs and begun construction on several of their own.

The main ingredient of the reef system is scrap tire casings. These relatively useless solid waste items are extremely durable in salt water, easy to handle and in almost limitless supply. In processing, five to eight tires are stacked on a hydraulic press, mashed down to a height of about eighteen inches and bound on three sides with light steel bands. The fourth side is bound with a heavy plastic strap. The completed bundles are then slashed with a chain saw, strung on long cables and barged to the reef site. Once overboard the vents made with the saw allow trapped air to escape and the tires settle to the ocean floor. The cables are attached to concrete anchors or to large stable objects already on the reef to prevent the material from drifting. In a few weeks the steel bands corrode and break, letting the tires open out in a fan around the plastic one. This increases both the surface area available to marine growth and the number of hiding places for small fry. Several such strings laid crosswise over one another make an ideal fish habitat. The program currently has two tire presses in operation, processing some 7,000 tires weekly.

Three of the 1000 by 500 yard ocean sites also contain ships, boats and other large items intended to give them profile. The largest of these are three 441-foot liberty ships from the Federal government's James River Reserve Fleet. The reefs are most often identified by their geographical locations, but are sometimes referred to by the name of one of the sunken vessels. Except for the site at Lockwood's Folly Inlet each has at least one white spar buoy marking it. Some have more. The Lockwood's Folly site is entirely the work of the Brunswick County Fishing Club and is not presently being improved by the State.

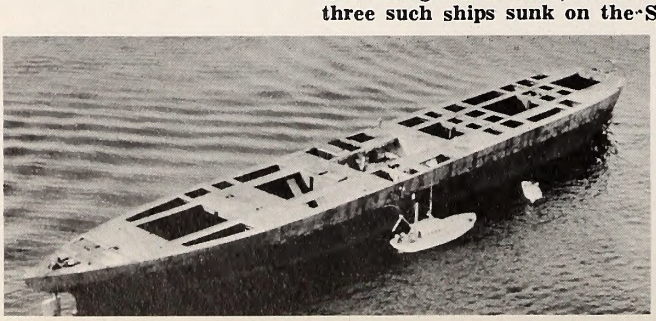
LOCKWOOD'S FOLLY INLET: begun in 1970, contains about 12,000 tires and two barges on a sand bottom in 45 feet, 4.5 miles, 180°M from the inlet. Marked by two yellow buoys reading "Fish Haven."

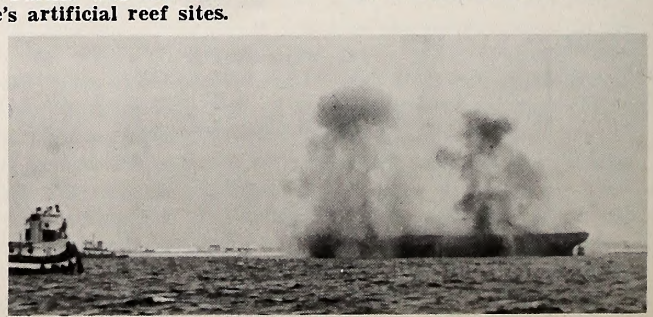
LONG BEACH: 37,000 tires on the site of a sunken barge. Reef is 5.8 miles, 270°M from buoy #13 in the Cape Fear River ship channel. Reef is 35 feet deep on a sand and shell bottom.

WRIGHTSVILLE BEACH: largest in the State to date, it was begun in 1970. In two sections, it contains the 110-foot tugboat **Firefighter,** two 90-foot barges, a

The liberty ship Theodore Parker is readied with demolition charges and then, boom! The Parker was the first of three such ships sunk on the State's artificial reef sites.

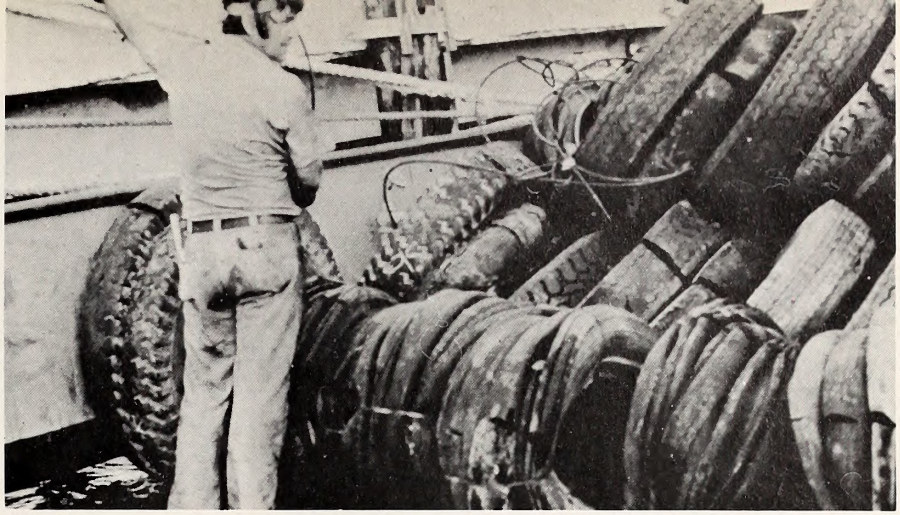
N. C. FISHERIES COMM. PHOTOS





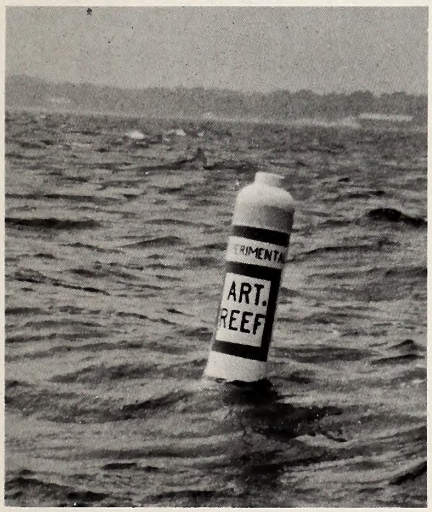
N. C. FISHERIES COMM. PHOTOS

The State's two hydraulic presses reduce stacks of tires to a height of less than two feet. At least one white spar buoy (below) marks each State reef site.



Tire bundles are loaded onto barges, cabled together to prevent drifting, and towed to designated sites. It doesn't take long for the fish to find these areas (below), although it may be a matter of years before marine incrustations take hold to lure permanent fish populations.

NAT'L. MARINE FISHERIES SERVICE PHOTO



few old kitchen appliances and about 5,000 tires in one area with the liberty ship **Alexander Ramsey** and about 20,000 more tires just inshore. Each section is buoyed. Site is 100°M, 3.5 miles from Masonboro Inlet in 50 feet of water on a bed of dead coral.

FIGURE EIGHT ISLAND: about 9,000 tires on hard sand 195°M, 3 miles from Rich's Inlet in 45 feet. Sometimes called the Kelly-Springfield Reef because it is made up entirely of reject tires from that company's Fayetteville plant.

TOPSAIL BEACH: about 5,500 tires on hard sand near a small section of natural rock. 85°M, 2.5 miles from the black-and-white "NT" buoy at New Topsail Inlet. Part of this 40-foot deep area is presently being considered for an underwater State Park.

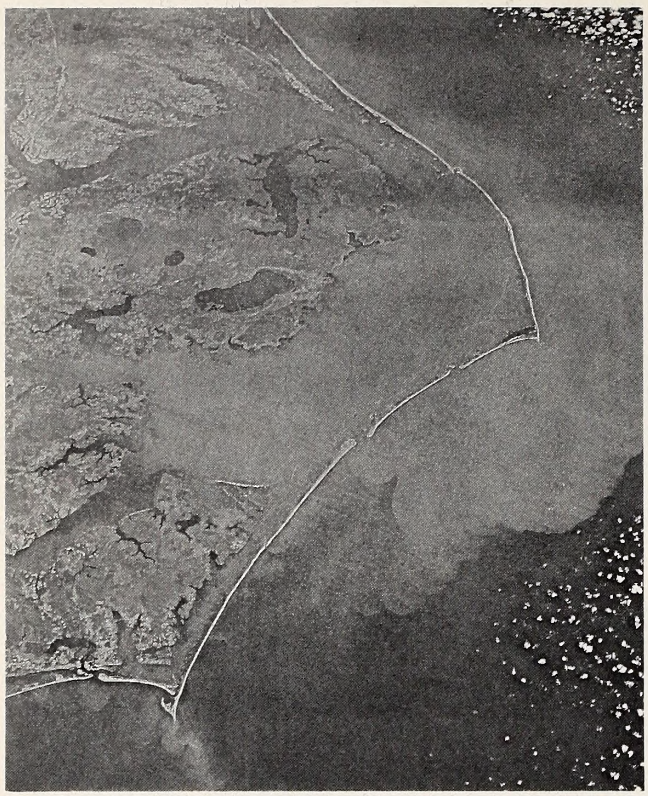
ATLANTIC BEACH: oldest reef in the State, it was begun in 1964 by the Fabulous Fishing Club of Morehead City and later improved by the Carteret County Commissioners. Contains about 1400 tons of concrete rubble, the hull of a 40-foot patrol boat, and about 20,000 tires fanned out around the stern of the liberty ship **Theodore Parker.** 4 miles, 240°M from Beaufort Inlet, the site is marked in 50 feet by a white buoy on the **Parker's** bow and a red one on her stern.

OREGON INLET: liberty ship **Zane Gray** sunk in 72 feet, 4.5 miles, 150°M from the black-and white "OI" buoy at the inlet. An 83-foot trawler was added recently.

All these locations are constantly having material added to them. Additional reefs are planned for New River, Bogue and Drum Inlets, and one is to be built on the N.C.—S.C. line in cooperation with South Carolina authorities. The program has two small experimental reefs in estuarine waters which are being regularly monitored and will be expanded if the results indicate that it would be worthwhile.

The success of the reefs is very encouraging. A creel census conducted by Fisheries statisticians shows catch rates on all the sites are continually increasing as the reefs age, and in at least one case sizable fish moved onto the site within a few days of the time the first tires were sunk. Hogfish, flounder, croakers and bluefish head the list of edible species. During the fall season many kings were caught by float fishermen on the Atlantic and Wrightsville Beach sites and a few jacks were picked up by trolling. Bluefish were thick in the fall and some were even hooked by anglers bottom fishing with cut bait. Black bass, spot and porgy were also caught on the bottom.

Underwater surveys made by scuba divers before the reefs were placed, revealed very little marine life in the areas where these catches are now being made. As the reefs get older and a larger permanent population establishes itself it is expected that the fishing will continue to improve. ⬍⬍



The Coastal Management Act – HOW DOES IT AFFECT YOU?

by John Crew

Meetings are continuing to determine areas to be designated under this Act. Situations described in this article are constantly being modified and may be different by the time you read this.

• North Carolina has numerous rivers, bays, sounds, and marshlands bordering on or influenced by the Atlantic Ocean. In fact, these estuarine areas are so numerous that North Carolina boasts the third largest amount of total acreages of marshlands in the U. S. These seemingly endless estuarine areas are the primary nursery habitats of most species of commercially harvestable fish and shell fish and also serve as wintering areas for great numbers of waterfowl.

Because the variety of animal and plant life and the diverse geography of the coastal area produces such great natural amenities, man has also chosen to inhabit the area. Problems are the results. Problems such as the destruction of large areas of marsh by pollution and haphazard dredging and filling. Problems such as development on unsuitable soils resulting in erosion and increased danger of storm damage. Problems such as haphazard urban development resulting in the destruction of prime agricultural land and the often unwise use of environmentally sensitive areas.

Due to these and other environmental and land use problems, the General Assembly in 1973 enacted a comprehensive state law which will regulate development in the 20 coastal counties in the state. The Coastal Area Management Act, often referred to as the most extensively studied, most widely debated and most amended legislation before the 1973-74 General Assembly, became fully effective on July 1, 1974. In essence, the Act consists of three major parts: a mandated land use plan for local governments, designation of areas of environmental concern and a permit system for development within those environmentally sensitive areas.

The administrative body charged with implementing the Act is the Coastal Resources Commission, a 15 member appointed group of coastal residents representing various occupations and interests. Three of the members were appointed at the discretion of the governor and the remaining 12 were chosen from nominees made by coastal towns and counties. The primary responsibility of the CRC is to establish planning guidelines, approve land use plans and act as a permit issuing body for construction. Similarly, there is a 45 member Coastal Resources Advisory Council made up of locally appointed representatives from each coastal county and also representatives from various state government agencies. The Council's primary duties are to advise the Commission on matters before it and to assist local governments.

The Act itself requires that each county prepare a Land Use Plan. Municipalities within each county had the option of preparing their own plan or having the county assume the responsibility. The plan will contain statements of goals and objectives made by local citizens. The CRC has determined that citizen involvement is so vital to success of the plan that the Guidelines for Local Planning in the Coastal Area, adopted by the CRC on January 27, 1975, require citizen participation. To this end, the CRC has published a handbook for elected officials on how to obtain public input and made these documents available to all local officials. Public meetings, surveys, questionnaires, and news items are being used to gain public participation in the goal formation process. The Plan also requires an assessment of the resources, both natural and manmade, available to the counties and municipalities. After careful evaluation of the goals of a community and the resources

PHOTO BY JOEL ARRINGTON

Our coast, with its marshes, swamps, estuaries, beaches, and associated wildlife populations, provides the very sustenance for waterfowl, and other water birds; fish, both salt and brackish water species, and a wide variety of other living things . . . including man.

PHOTO BY TOM JACKSON

available to attain these goals, the plan will be developed with an outline of the most reasonable way of meshing the two. Once the plans are adopted, then all land development within the planning jurisdiction must conform to the plan.

The CAMA also requires the CRC to identify critical areas which may be considered for protection or preservation in each county. Once these Areas of Environmental Concern or AEC's have been proposed, the local officials and public will review them. Similarly, local officials may purpose these areas of concern. Then the CRC will designate their inclusion into the county plan. These areas include marshlands, beaches, sand dunes, navigable water and historically significant areas and will be defined by the CRC. Designation of an AEC does not prohibit use of the area. It does, however, require that any proposed development within the area have a permit. The permit system, which operates only in AEC's, should ensure that any proposed use within the AEC's will be evaluated before the development occurs. Projects in AEC's such as those of 20 acres in size, those that necessitate drilling for or excavating natural resources on land or under water, those which presently require a state permit and those which involve construction of one or more structures having an area greater than 60,000 square feet will require a permit from the CRC.

The workability of the Coastal Area Management Act depends in part on public participation. If you are a resident of a county preparing a Land Use Plan under the CAMA, have a voice in the decisions that will ultimately affect you. The local officials want your assistance in determining what your town or county will be like. You can become involved by contacting them. You can also help organize citizen information meetings. Let public officials know your feelings on how the marshes, bays and rivers should be used or preserved. If you don't help make these decisions, they will be made for you. Time is of the essence as the Land Use Plan for each county will be officially adopted by November 23, 1975.

The Coastal Resources Commission, P. O. Box 650, Morehead City, North Carolina 28557, can provide further information on the Coastal Area Management Act. ◆

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Special Attention

"Wildlife in North Carolina" magazine subscriptions formerly paid for as part of sustaining memberships in the N.C. Wildlife Federation are no longer provided. The Federation determined that the additional cost of renewing subscriptions to "Wildlife" after the price went to $2.00 a year should be spent in improving your Federation magazine "Friend O' Wildlife".

We hope that you will continue to subscribe to "Wildlife in North Carolina". For your convenience in renewing your subscription, simply complete the form on the inside back page or send us your complete name and address (including zip code) along with a check or money order.

Courtesy Motorboat Examinations

U.S. Coast Guard Auxiliary Flotilla 93 (Winston-Salem) is conducting Courtesy Motorboat Examinations as follows:

Date	Time	Location
June 7	10:00 am - 5:00 pm	Midway Marina, Lake Norman
June 7	10:00 am - 5:00 pm	Commodore Marina, Lake Norman
June 7	10:00 am - 5:00 pm	Carolina Campin and Marina, Belews Creek Lake
June 29	10:00 am - 5:00 pm	Midway Marina, Lake Norman
June 29	10:00 am - 5:00 pm	Commodore Marina, Lake Norman
June 29	10:00 am - 5:00 pm	Carolina Campin and Marina, Belews Creek Lake

National Hunting and Fishing Day

September 27, 1975, marks this year's National Hunting and Fishing Day. You and your organization can participate in this event by planning interesting displays, field days, and other programs. For information about stickers, news releases, etc. contact NHF Day, 1075 Post Road, Riverside, Conn. 06878

All Motorboats Must Be Numbered

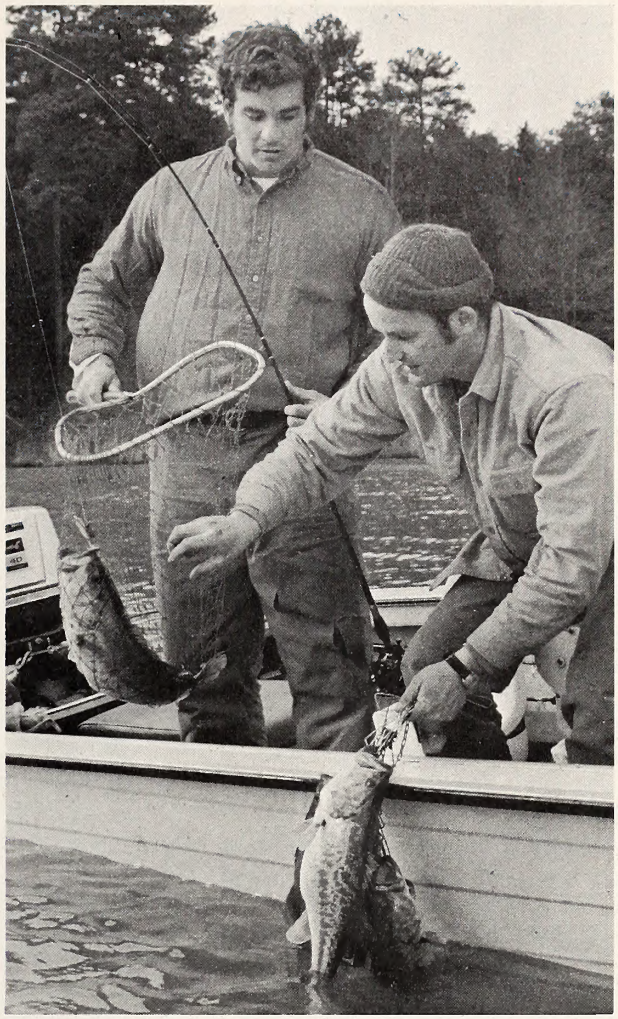
New legislation just enacted requires that all boats powered by motors must be registered with the Wildlife Commission and numbered effective January 1, 1976. Watch for details on this new law in the July issue of "Wildlife."

BASS FISHING

What Would Grandpa Think?

FISHING

by Jim Dean



• When I was a kid some 25 years ago, I used to fish with my grandfather in an old millpond near my home in Halifax County. We fished for bluegills and speckled perch (crappies) but mostly we fished for bass.

Grandpa's tackle was rather typical, I suppose. He had two casting rods. One was a short True Temper square steel rod, while the other was a six-foot Heddon split cane. Both had seen better days, and in fact, the split cane rod had a rather noticeable splice about halfway up.

Grandpa's favorite reel was an old Pfleuger Supreme, but I recall that he also had a Pfleuger Summit and an old South Bend which didn't even have a level-wind mechanism. All his reels were loaded with black braided line, but he usually attached a four-foot section of nylon for a tippet.

The lures he used would look strange to many modern bass fishermen. His favorite was a Johnson Silver Minnow with pork rind (still a good combination even today). When he wanted to fish on top, he used a large wooden crippled minnow with glass eyes and a propeller on each end. When he cast that lure, it hit the water with all the grace of a cinder block, and after the props began spinning, it looked like a P-51 ditching in the English Channel.

Our bass fishing was fairly casual. We'd usually slip off fishing when I got out of school on weekdays, or on Sunday after polishing off a platter of fried chicken.

We'd carry a couple of old cushions and paddles and scull around the 33-acre lake. It was relaxed fishing. We knew every stump on the lake and I think we also knew every bass that lived there. We never caught a whole lot of fish, but Grandpa would occasionally haul out a whopper.

We fished the same way, using the same tackle, for over 20 years. But that's not hard to understand because bass fishing and tackle changed very little from about 1930 until the middle 1960s.

Since then, bass fishing has undergone vast changes and Grandpa didn't live to see most of them.

He had a chance to try spinning tackle (which he thought lacked the backbone and durability of casting tackle). He also used some of the first plastic worms on the market, and he liked them for the simple reason that they caught fish. Of course, we ruined everything in our tackle boxes with those early worms because they melted like Jello.

But like I said, Grandpa missed most of the newest innovations in bass fishing. He didn't see the revival of bass-casting gear with stiff fiberglass and graphite rods. I don't think he ever saw an electronic fish finder or any of the other electronic gear so popular today. He'd have been amazed at the foot control electric motors, the free-spool casting reels and multi-colored spinner baits.

I'd give anything to see the look on his face if I could show him a modern bass boat all rigged out with everything from bulkhead to bulkhead carpet to an electric fan and an umbrella.

"Somebody's going to a heap of trouble just to catch a few chubs," he might have said.

On the other hand, he might have whipped out his checkbook and bought a complete outfit. After all, he sure liked to catch bass. ⬍⬍

Five Fancy Ways To Cook Frogs' Legs

by Bernadette Hoyle

IN both Europe and the United States, the hind legs of the frog are considered a delicacy. In the southern states, where frog gigging is a favorite nighttime sport, it's a lucky family that can sit down to a meal with frogs' legs as the entree. Frogs' legs are somewhat like chicken in flavor and texture. They are available fresh at some fish markets and are usually skinned and ready to cook. They can also be bought frozen.

When dressing fresh frogs' legs, cut off the hind legs close to the body, wash well in cold water, remove the feet. Chill, then skin, beginning at the top and stripping off the skin. Then soak an hour or two in cold water or milk. Dry thoroughly before cooking.

Remember, **whether fresh or frozen,** always soak the frogs' legs in cold water or milk about two hours before cooking.

BROILED FROGS' LEGS

Frogs' legs
Butter, fat or oil
Salt
Pepper
Butter Sauce

Use dressed frogs' legs, wash them and dry thoroughly. Pass the joint of one leg through the muscle of the other, thus holding them in good shape. Brush them with the fat, dust lightly with salt and pepper and broil until they are a delicate brown and tender. Serve with a butter sauce. (Melted butter with a little water and salt added).

SAUTEED FROGS' LEGS

Frogs' legs
Flour
Lemon juice
Salt
Butter, fat or oil
Onion juice
Buttered toast
Pepper

Use dressed frogs' legs, wash them and dry thoroughly. Roll the legs in flour and saute them in butter, fat or oil to which a few drops of onion juice and lemon juice have been added. When done, place on slices of thin, hot buttered toast and sprinkle with salt and pepper.

FROGS' LEGS CREOLE

12 large frogs' legs
Boiling water
1 teaspoon lemon juice
Salt and pepper
2 well beaten eggs
Dry fine bread crumbs
Fat for deep fat frying

Put lemon juice into pot of boiling water, add frogs' legs, salt and pepper. Scald four minutes. Dry legs thoroughly, dip into beaten eggs and roll in bread crumbs. Fry in hot deep fat two or three minutes until frogs' legs are tender. Serve with white cream sauce to which you have added 1 tablespoon of minced parsley and one-fourth teaspoon onion juice. Pour the sauce over the frogs' legs.

FROGS' LEGS FLAMBE

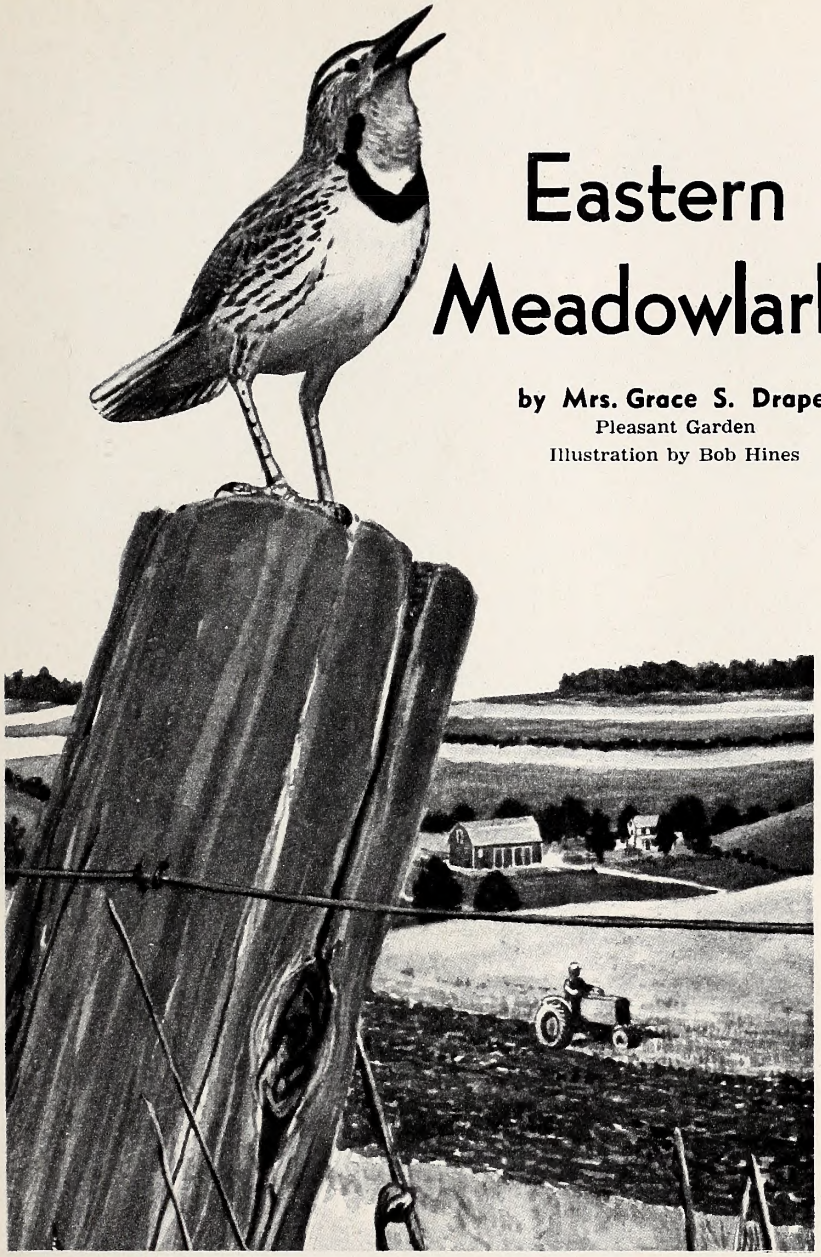
12 large frogs' legs
Salt and Pepper
½ cup butter
2 garlic cloves, crushed
Juice of ½ lemon
2 tablespoons minced chives
2 tablespoons minced parsley
2 tablespoons fresh tarragon
2 tablespoons brandy
¼ cup dry white wine

After washing the frogs' legs in cold water, dry them thoroughly. Season with salt and pepper. Heat the butter in a large heavy frying pan until foamy, then add the lemon juice and garlic. Saute the frogs' legs over moderate-high heat until both sides are golden brown. Add chives, parsley and tarragon and cook one minute. Pour the brandy over the frogs' legs and flame. Add the white wine and cook one minute.

FROGS' LEGS POULETTE

12 pairs frogs' legs
3 tablespoons butter or margarine
2 tablespoons flour
½ cup dry white wine
Salt and pepper
1 tablespoon minced parsley
2 eggs yolks
2 tablespoons water

Soak frogs' legs in cold water two hours. Dry thoroughly. Saute in the hot butter or margarine two minutes on each side. Sprinkle the flour over the frogs' legs and stir to blend with the pan juices. Add wine, salt and pepper, and parsley. Cover and simmer until tender, 10 to 15 minutes. Remove the frogs' legs to a dish and remove the pan with the juices off the heat. Beat the egg yolks and water, add gradually to the hot pan liquid and blend thoroughly, stirring over low heat until it thickens. Pour over the frogs' legs and serve.



Eastern Meadowlark

by Mrs. Grace S. Draper
Pleasant Garden
Illustration by Bob Hines

THE crisp, bell-like "E-o-la-ay" of the meadowlark often echoes from the top of the trees in the damp stillness of early morning, heralding a new day. This is one of the pleasures of country living, as the meadowlark is a rural bird of the fields and pastures. Often you may spot groups of them sitting high on roadside telephone wires, facing into the sun, where the brilliant chrome yellow of their breasts (as if freshly painted from an artist's oils) is spectacular in the sunlight. The vivid black "V" stands out prominently against this yellow background.

The meadowlark is a year-round resident of North Carolina. Its nests are concealed on the ground in tufts or clumps of grass, often sporting a covered passageway. It is very difficult to locate such a nest, and usually they are discovered quite by accident, or by a farmer's mowing over them. Many nests are undoubtedly destroyed in this way. With so many four-footed (and other) predators prowling the fields, also, it is remarkable that young meadowlarks can survive in any numbers and grow to maturity. The nests we have found have held three white, robin-size eggs, splotched with brown and lavender. When disturbed on her nest, the mother bird performs the broken-wing act quite expertly (as do quail) in an attempt to lead the intruder away.

A member of the same family **(Icteridae,** from Greek, meaning yellowish) as the blackbirds, the meadowlark is the farmer's friend as he hurriedly marches through the grass searching for cutworms, caterpillars, beetles and grasshoppers, as well as insect grubs. He also consumes weed seeds and waste grain. When flushed suddenly, he soars upward with alternate rapid wing-beating and gliding with wings outspread.

The meadowlark has a lovely trilling, whistled song, in addition to the familiar yodel-like call associated with him. In the late afternoon a group of them may gather in the tops of trees and whistle melodiously to one another, a concert that is worth every minute of listening time! We counted seven birds in as many trees doing just that one afternoon.

In the fall these birds group together in flocks and at dusk several dozen will sail into the edge of a nearby field for roosting on the ground.

The eastern meadowlark ranges westward into Arizona, where its western cousin takes over. Even though both species overlap, studies indicate they do not hybridize; females apparently choose their mates on the basis of call notes.* Audubon named the western species **Sturnella neglecta,** as he felt "no one had taken the least notice" of these birds since the Lewis & Clark Expedition that reported them, probably because of the similarity of the two birds. Certainly the meadowlark merits our attention and esteem because he lacks completely the bad habits of some of his aggressive cousins, the blackbirds. His Latin name **Sturnella,** which means "starling," and **magna** for "large," are somewhat misleading; we would prefer that the **magna** be interpreted to mean "outstanding" or "with great distinction" **(magna cum laude)** for he surely performs his role in the bird world in such a manner.

*Wetmore, Alexander et al., *Song & Garden Birds of North America.* Washington, D. C.: National Geographic Society, 1964, pp. 300-2.

Paddle Your Way to Adventure

Part 3

by L. S. Lane

This is the last in a series on canoes and their use. Although this fine water craft is designed for paddling, it is adaptable to small outboard motors, too.

CANOEING and camping are rarely thought of as partners. But canoe camping is a great way to extend your enjoyment of fishing, hunting and life in the outdoors. Instead of backtracking to your starting point, when fish are starting their late afternoon feeding, you can extend your fishing time and put ashore at the first suitable site if you are prepared for camping.

Extended hunting or fishing time is but one advantage of canoe camping. It will take you away from crowded campgrounds along highways and reveal shoreline wildlife and an ever changing backdrop of scenery.

Most canoe experts agree that a 16 to 18 foot canoe is best for camping purposes. This length is appropriate because of the ease it affords in handling when carrying a full load as opposed to the shorter length canoes used in rapid water canoeing.

If you plan to do most of your camping along a lake, a canoe with a keel would be better suited. A keel will hold your canoe on course during high winds that sometimes blow in rather quickly on large compounds. A keel, however, would be detrimental to river canoeing. Loaded with gear, a canoe with a keel will catch rocks and snags too often for comfort.

There is a lot in favor of using a small motor on a canoe for camping. Some thought should be given to a motor if you plan extensive trips or trips with youngsters. Canoeing sometimes tries young and old muscles alike when paddling upstream or bucking a head wind.

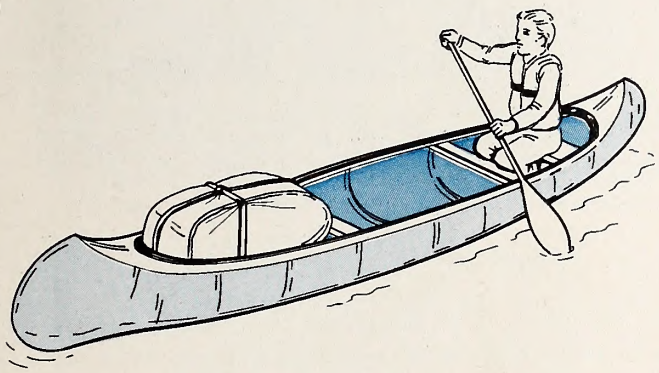
If you should decide that a motor would fit your particular need, choose a canoe with full rather than fine ends so the motor will not cause the ends to dig in. Square stern canoes can carry more than half a ton, ten times its weight, of people and gear.

Once you have decided on the type of craft you will purchase, you must next focus your attention on equipment. You will be more limited in the amount of gear you can carry. Weight is a factor in canoe camping since a moderately loaded canoe will handle much better, either with motor or paddle, than an overloaded canoe.

You can buy a camping outfit, rent one, or make do with items from home. A minimum of camping gear will probably cost less than half of what your canoe did. Most canoeists use lightweight gear that is designed for hikers. Lightweight tents, stoves, packs and other accessories allow the canoeist a wide choice of equipment without unnecessary weight or bulk.

A sensible approach would be to take short daytime trips to familiarize yourself with handling and setting up your equipment. Prepare hot meals, if only for a midday stop. Set up your tent and other gear. You'll soon be able to judge what additional gear you'll need to take along on more extended trips. And you will

Balance is very important in safe canoe use. Make sure that the load is placed in such a manner that the canoe "rides" well. Weight distribution as shown, makes handling easier.



have an idea of time involved in equipment set up and so on.

Loading a canoe is another area that requires some practice. An improperly loaded canoe has caused more than one needless mishap. In loading your canoe, it is better to beach a canoe slightly, but not completely out of water, rather than attempt a dock side loading. If the water is not too deep, most canoeists prefer to wade into the water to load their canoe rather than take the chance of scraping the bottom of their canoe on sand or gravel.

Distribute your gear so the heavier packs are amidship and low. Allow sufficient space for everybody's feet. With passengers aboard, weight should be distributed evenly in regard to the centerline, the stern riding just a little lower than the bow. In rough water, however, crowd the weight as close to center as practical, and you'll turn far more quickly in fast water. Amount of freeboard can be critical; leave plenty.

You can adjust trim by situating the weight evenly, or a short distance back from center. Obviously, much depends on the weight of the paddlers. Place the most experienced and heaviest canoeist aft. If forced a choice, let the oldtimer ride in the stern and compensate for a heavyweight in front by reshuffling the cargo aft.

It is usually a good idea to place boughs or poles lengthwise under the cargo. With a slightly stern-heavy hull, any water taken aboard from a rain shower or rough water spray will run aft for bailing.

A tarpaulin or 12' by 12' square of heavy duty plastic wrapped and tied over the load will keep the camping gear and supplies dry. Sleeping on damp bedrolls or cooking soggy groceries is no fun.

Be sure that the spare paddle is not tied down, but rather placed in such a position that it can easily be reached by the sternman. If a paddle is broken at a crucial time during a rapid run or an encounter with heavy waves, a delay of only a few seconds in grabbing a new paddle can mean disaster.

Placing your gear in heavy-duty, clear plastic bags will help in locating cameras, maps and other equipment that you may need in a hurry. These items plus your first aid kit, snacks, fishing gear and ammo should always be packed in separate bags and tied to a thwart instead of being covered by the tarp. Medium size packs or duffles will load better and be easier to carry if a portage is necessary than large, heavy packs.

One of the pleasures of canoeing is the exploring of new waterways. But to make your trips both safe and enjoyable, you should have some visual aids such as maps or charts to assist you in your travel plans.

State and Federal agencies can suggest waterways that are suitable for canoe camping, and can tell you where campsites are maintained along the way that are open to the public.

For information on North Carolina streams, write for the booklet "Streams and Trails of North Carolina", available free on request from the N. C. Travel Development Section, P. O. Box 27687, Raleigh, N. C. 27611.

Maps supplied by the N. C. Highway Department can be very helpful. These maps are primarily county road maps, but streams and rivers are shown. Entry points and pickup areas can be easily identified, as well as possible campsites and villages.

The U. S. Geological Survey, Washington, D. C. and Geological Survey of Canada, Ottawa, Canada, have maps of any region that you would like to canoe. It isn't necessary to ask for a particular map by number. Usually if you describe the area you want, they will accommodate.

The National Park Service, U. S. Department of the Interior, Washington, D. C. 20240, and the U. S. Forest Service, Department of Agriculture, Washington, D. C. 20250 will supply you with maps and brochures of the lands and streams under their jurisdictions.

Another source is the U. S. Army Corps of Engineers. They have free folders on regional lakeside recreation that can be obtained at Corps of Engineers district offices or from the Public Affairs Office of the Chief of Engineers, Washington, D. C. 20314. These folders contain maps, directions and lists of facilities at all Corps recreational areas.

Maps and charts provided by government agencies will give you a general layout of an area and help you plan campsites and even supply stops. But unfortunately for canoeists, these maps do not show rapids, portages and other hazards. The best maps, water charts and canoe trip guidebooks are published for the canoe clubs. Not all North American waterways are covered by these guidebooks so sometimes the government maps are the only source available.

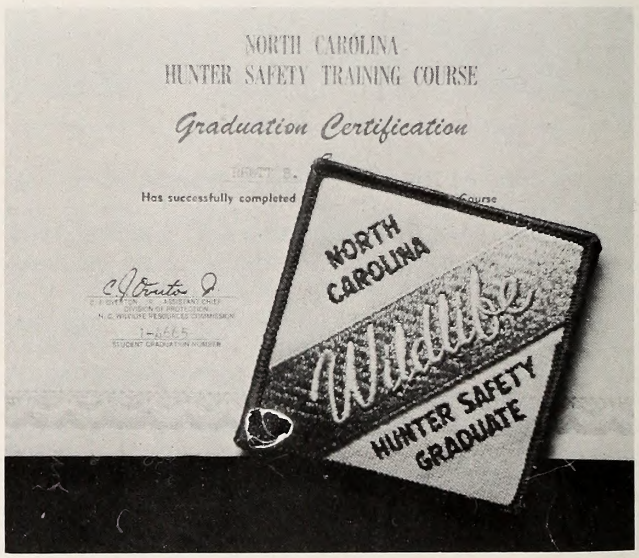
Canoe organizations such as the American Canoe Association, 4260 E. Evans Ave., Denver, Colo. 80222 have guidebooks available and can supply you with information on canoeing waters in almost any state. Bob Benner's "Carolina Whitewater" is available at $5.00 from Pisgah Providers, P. O. Box 101, Morganton, N. C. 28655.

The objective of hunter safety training in the schools is not to make youngsters into hunters, nor make them marksmen, but rather to offer instruction on safe gun handling before they develop unsafe habits. Perhaps our children will be safer hunters than we are.

Safer Hunters

by Mrs. Gwen A. White
Kitty Hawk

Does your school have a course in hunter safety? Hunting can be a safe sport, but it takes special instruction under the watchful eyes of trained teachers to develop safe hunters.



PHOTOS BY THE AUTHOR

• Hunting accidents among young Tarheel hunters should decrease in future hunting seasons if the North Carolina Hunter Safety Program is as successful as its proponents expect. Thousands of junior-high school youngsters throughout northeastern North Carolina completed a hunter safety course of approximately two weeks length last fall, taught by volunteers, teachers and local wildlife protectors.

Hunter Safety Officer Wilton B. Pate of Ayden has organized courses in the coastal and northeastern section of the state that utilizes volunteer instructors in firearm safety. Most courses are taught through the schools and are directed at seventh, eighth or ninth graders, who are potential hunters but who have not formed too many bad gun handling habits.

Pate, along with E. R. Jarrett in the piedmont and Raymond Lyle Morgan in the western section of the state, contact local school officials or youth group leaders and train volunteers to teach the hunter safety courses. These volunteers must successfully complete an intensive four-hour classroom session before being certified as National Rifle Association and N. C. Wildlife Resources Commission Hunter Safety Instructors.

The program first began in March 1972. By last September 43,000 students had been trained in the proper handling of fire-

Youngsters are usually eager to learn about hunter safety, and even bow hunting is stressed in the course. Successful completion of this course results in more than a graduation certificate.

arms and the statewide program had received two awards from the National Rifle Association of America. One award was for training 25,000 students last year and the other was for having one of the top ten safety programs in the nation. A large number of junior high and high schools now include the course as a part of their health and safety curriculum.

The course follows an outline that includes firearms nomenclature, firearms handling, ammunition, powders and propellants, safety practices, dangerous guns, hunter activity, game laws and sporting ethics. Units are also included on first aid (relative to gunshot wounds and shock), archery and survival techniques.

At the end of the classroom section, students practice what they have studied by actually shooting .22 caliber rifles at still targets and, if practical, trap shooting with a shotgun. This marks the first time many youngsters have ever fired a rifle or shotgun.

Before a certificate of graduation can be issued, students must pass a 25 question Hunter Safety Course Examination. Successful students receive a pocket identification card, a wall graduation certificate and a shoulder patch.

Pate concentrated on getting programs underway in as many northeastern North Carolina schools as possible during September and October. Most of North Carolina's fatal hunting accidents during the past year occurred in that section of the state.

At one school, Columbia High School in Tyrrell County, the course is offered in cooperation with the county 4-H organization. There Bobby Armstrong, Agricultural Extension Agent and 4-H Coordinator; Greg Thomas, junior high health and physical education teacher; Wildlife Protector Carl Willis; and W. C. Harrell, principal, teach the course. Over a two-year period, they have trained 200 boys in firearm safety.

Girls are usually offered the course since some girls hunt and others are, or will be, exposed to firearms in the home. "We want them to be conscious of how to use or treat guns, and to respect guns," Armstrong states. "The first thing we teach is how to check to see if a gun is loaded."

"Ironically, the girls usually score higher than the boys," Armstrong adds.

The unit on archery is taught to familiarize students with bow handling and hunting techniques and procedures. Students are cautioned that a bow and arrow is as accurate, at the same range, as a shotgun.

Survival instruction includes suggestions on selection of proper hunting and outdoor clothing and footwear, hazards of the outdoors and first aid.

At Kitty Hawk Elementary School all seventh and eighth graders completed the course during the first week of November. Joe Dzwonek, a middle school science teacher and avid hunter, taught the course which utilized slides, 16mm sound movies, and the 21 page North Carolina Hunter Safety Student's Manual. Beginning next year, Kitty Hawk seventh graders will take the hunter safety course each year.

During the live-firing phase, Jerry Hatchell, a Dare County deputy sheriff, and Wildlife Protector Terry Waterfield assisted with safety instruction. Protector Waterfield also discussed game laws with the classes and answered student questions concerning hunting regulations and customs.

"I don't think there has been any doubt about the value of this program to our students," states Principal Rhett B. White. "A large number of our students hunt and many more will before they finish high school. They were very enthusiastic about the course and most of them took it quite seriously."

"We received favorable parent and community support of the Hunter Safety program too," White said.

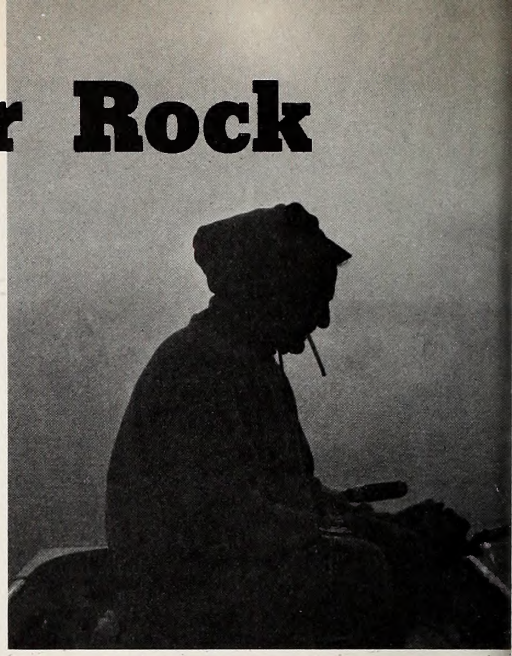
Seventeen states now have mandatory programs whereby a person has to pass a hunter safety course before he can purchase a hunting license the first time. Completion of the North Carolina program meets this requirement.

Anyone interested in seeing this program in their community should contact their local Wildlife Protector or Wilton B. Pate, P. O. Box 305, Ayden 28513 for Eastern North Carolina; E. R. Jarrett, P. O. Box 5, Haw River 27258, for piedmont North Carolina; Raymond Lyle Morgan, Rt. 4, Box 922-T, Marion 28752 for western North Carolina; or C. J. Overton, N. C. Wildlife Resources Commission, 325 North Salisbury Street, Raleigh 27611. ◆

Moonlighting for Rock

by Gerald Almy
Arlington, Va.

The best fishing of this type won't be until this fall, but it sure is worth a try right now. The landlocked striper is fine game fish.



THE moon shone full and luminous on the warm, flaccid November night. A gentle southwesterly breeze rippled the glowing surface of Lake Gaston on the Virginia-North Carolina border. Crickets chirped and locusts buzzed, filling the empty night air with their monotonic music.

An owl swooped in nearby shrubbery as his prey screeched in terror, breaking the stillness of the night. But all was not quiet in the nearby water, either. Other predators roamed in the murky depths in search of forage to fll their empty gullets. Striped bass were invading the waters under the bridge, whipping the inky liquid to a froth. slashing and busting at the frantic shad and shiners that fled before their savage jaws, leaping from the water as if from a scalding frying pan.

Randy Isenberg dropped his lip-hooked minnow next to a bridge piling where an awesome rise had just subsided. Seconds later I saw his rod jerk downwards violently in the glare of the moonlight. The drag on his spinning reel let out a mournful, protesting scream as a striper inhaled the bait in his throat, hooked himself, and took off like a bolt of lightning across the placid waters of Lake Gaston.

"Whooeee! Got one," he hollered at the top of his lungs. For a fisherman use to battling foot long trout and two or three pound bass this fish was a behemoth. The grin on Randy's face shone like a torch, but there was tension too, and nervousness etched in the moonlit face, lest the fish spit out the hook prematurely. He played the striper expertly, though, and soon led the exhausted fish into the landing net I held stretched out for his prize. One last thrash was futile as I hoisted the beautiful silvery gem clear of the black water.

Randy was shaking like a leaf. "What a fish. You won't be able to live with me the rest of this trip. I might as well let you know now. After I catch a fish like this, I'll be talking about it for the next two weeks," he confessed.

"I'll just have to get a pair of ear plugs," I laughed as I went back to casting my bucktail to the still-boiling fish. I flicked the half ounce yellow jig towards a fish that had just broken the surface with a deep pitched, resonant wallow and began an erratic, fast retrieve. Before I had turned the handle on the spinning reel twice a sudden malicious jolt interrupted the bucktail's progress. I pulled back grimly, only to have the lure pull free.

"Have you got one?" Randy asked.

"No," I responded dejectedly, "but I had a good strike. I guess I'll just have to catch his grandpa instead. He's probably in Peking by now, after feeling the sting of that barb."

I cast again at a different fish that was coming up every few minutes to slash at the shad and shiners coralled in the narrow passage beneath the bridge. Two casts went unheeded, but on the third a fish nailed the bucktail as it darted past the bridge piling. I pulled back hard, determined not to lose this one, and was rewarded with an electrifying run from the stung rockfish. It seemed like he was going to peel off all 150 yards of line on my reel, but eventually the fish tired and I managed to turn his run. The battle was far from over, though, and it was a good ten minutes before I wore the streamlined silver fish down with the constant pressure from the limber spinning rod and 10 pound test line.

Randy had reeled in his line when I connected, so we wouldn't get tangled. He waited patiently beside me and made a deft scoop with the landing net as I led the striper in, swinging the writhing fish up onto the rocks. A gleaming 11 pound rock, shimmering in the brilliant beams of moonlight stared defiantly at us as I lifted the fish clear of the net.

Thus began a night of sport fishing that I won't soon forget. Not because it was a once in a lifetime opportunity. On the contrary, the arm-knotting striper fishing we enjoyed that night is typical of the action available at this time of year on Lake Gaston and other lakes stocked with that silvery demon, the landlocked striped bass. But the first experience, the initial introduction to a particular form of fishng, if things go right, is always etched more deeply in the memory than repeat fishing trips of the same kind. This was my introduction to nighttime landlocked striper fishing—a deadly method Randy and I stumbled upon with the luck of unschooled novices.

We were just arriving at Lake Gaston after a four-hour drive from our homes in Northern Virginia. We were visiting a former neighbor from Arlington, Mickey Johnson, who had recently retired and moved onto the shores of the lake near the town of Henrico, North Carolina, and hoped to get in a few days of bass and rock fishing.

Both of us are avid anglers, and we were a bit edgy after four hours of straight driving. We decided to stop at a bridge near Mickey's house to take a few casts before going on to his home in order to get some of the tiredness out of our bones. We didn't think we could sleep a wink with anticipation for the morning's fishing if we didn't at least get a couple of casts in before turning in for the night.

A nice evening's catch, all on light spinning gear. You may not score like this every time, but Gaston has plenty of rock this size. Randy Isenberg readies them for the pan.

Neither of us expected to do much more than limber up our road stiffened joints, really. But when we picked our way down the rockpiles jutting out beneath the bridge, wallowing stripers greeted our eyes and ears with a sound of pure joy for the angler. Fish were boiling everywhere in the bright moonlight, lurching at the frantic baitfish they had coralled in the narrow confines of the bridge. The shad and shiners were cornered where the lake crossed.

Water was flowing fast through the narrow passage, gurgling as it thrust against the cement abutments lying in the shadow of the bridge. I knew from earlier trips to the lake that flowing water was a prerequisite condition for rockfish and bass to invade the bridgewater in search of food, but I had never realized that the rockfish did so much feeding at night.

Actually, the two hours in the morning and two in the evening which had been most productive for Mickey and myself on earlier fishing trips were probably just the end and beginning of the frantic feeding that went on at night, as I see it in hindsight now after numerous highly productive night fishing forays on the lake. The largest fish seem to move in to the funneled area near the bridge when the water is flowing quickest. This occurs sometime during the day, but primarily at night, when the need for power to light homes, cook evening meals, and run the heat is greatest.

Baitfish congregate in these areas because of the high oxygen content of the water and the abundance of food in the form of vegetative matter and insects. I've seen shad so thick around these bridges that you couldn't throw your lure in without snagging one on the retrieve! Needless to say, this is a hearty attraction for big bass and rockfish.

But bridges offer other attractions to the stripers and bass also. They provide structure behind which the fish can ambush unwary baitfish, and the turbulent, highly oxygenated water is itself an attraction to the predator fish, especially the striper, which has a very delicate breathing system. This type of water is found most often where bridges are constructed on masses of land jutting out into the lake, which act as constricting necks on the large body of water existing on either side. The flow of water through such "necks" alternates in direction according to whether the flood gates at the dam are being opened or closed to meet current power needs. The fish seem to have no preference as to which direction the water is flowing—so long as it's moving, they'll be in there feeding.

By the time I had wrestled in my first rock, the flow of water through the bridgeway was slacking off a bit and so were the number of churning fish. A few stripers were still working out by the buoys that signal boaters to slow down while going under the bridge, but these were too far off to reach with my bucktail.

Randy made a long cast with his minnow, though, and then fed out line until he managed to get the bait back far enough to reach the boiling fish. As soon as the struggling shiner drifted into the spot a rock nailed it on the run with a burst of energy. Randy tried to open his bail to feed line to the fish, but the striper was so quick his efforts only got him a sliced finger as the line cut across his skin. But in his enthusiasm the striper had taken the bait fully in his mouth and hooked himself firmly.

The sting of the barb angered the massive fish and sent him thundering towards the center of the lake. Fearing that the rock might take off all his line, which he was peril-

ously close to doing already, Randy tightened his drag slightly. Just a little too much, it turned out. The fish interrupted his run to make a quick, head shaking lunge which snapped the 12 pound test line like a flimsy piece of sewing thread.

"Goodness gracious! He must have weighed 20 pounds," Randy lamented.

"Sure fought like it," I said. "They've taken them up to 32 pounds here, so it could easily have been a 20 pounder. Mickey got one last year . . ." An echoing boil under the bridge interrupted me before I could finish what I was saying. Randy urged me to try for the fish while he tied on another hook.

"Gladly" I replied. "The water's flowing the other way now, and stronger than ever. They must have opened the gates."

I cast at the erupting fish, but couldn't get any action so I clipped off the bucktail, along with a foot or so of line that had been frayed by the abrasive mouths of the stripers and the sharp-edged granite rocks. I clinch knotted a jointed Rapala to the line to try on the picky fish.

Flexing the rod in a deep arch I shot the lure past the fish's location and reeled quickly to simulate a frantically fleeing baitfish. That did the trick. The moment the rock belted the plug he was solidly hooked and headed for the dam in the distance. I took my time, letting him run with the drag set lightly so I'd be sure not to pop the line.

It took about 10 minutes before the rockfish finally submitted, allowing me to work the plug free so I could release him unharmed. I held the deep bodied fish loosely and worked him back and forth in the water, forcing his gills to start working again. After a couple of minutes he jerked free of my grip and slipped back into his murky sanctuary in good spirits.

Rockfish are difficult to keep alive if you want to release them. They must be handled very little, and not taken from the water for more than a few seconds. It's often necessary to give them a little "first aid" to get their balance back and their gills working properly once again. But it's worth the effort, for soon the fish will flip his tail and slip back to his watery home, grateful for the gift of life you have given him.

We landed far more fish than we could ever eat that night and returned all but four fish between 8 and 10 pounds which we kept for filleting. Fatigue from the afternoon drive was temporarily forgotten in the furor of our new fishing experience, but by 2 a.m. our bodily energy had fallen about as much as the moon had risen—completely. Our spirits said keep on plugging, but our arms and legs said call it quits.

So when the flow of water slackened off once again, we took advantage of the lull in action to drag ourselves away and drive on down to the Johnsons for a few hours of shuteye. We knew Mickey would be waking up us at the crack of dawn, wanting to go fishing!

Our total for the night was 11 bites for Randy on live minnows, six rockfish landed, and one bass. I had nine strikes on bucktails and minnow imitating plugs, and landed seven rock. The one bass we fooled tipped the scales at 3½ pounds, while the stripers went 5-13 pounds, averaging out at around nine pounds apiece. I'm sure we lost some bigger than 13 too, judging from the way they were pulling.

This was the best night we had on our three day stay, but action was only slightly less tumultuous the other two nights. Fishing during the day we took more largemouths, and a few rockfish, but nighttime was the best for the big rock. Live shiners seemed to elicit a few more strikes than artificials, but shad-imitating floater divers, white and yellow bucktails, and Rebels and Rapalas came quite close to matching the real thing in performance.

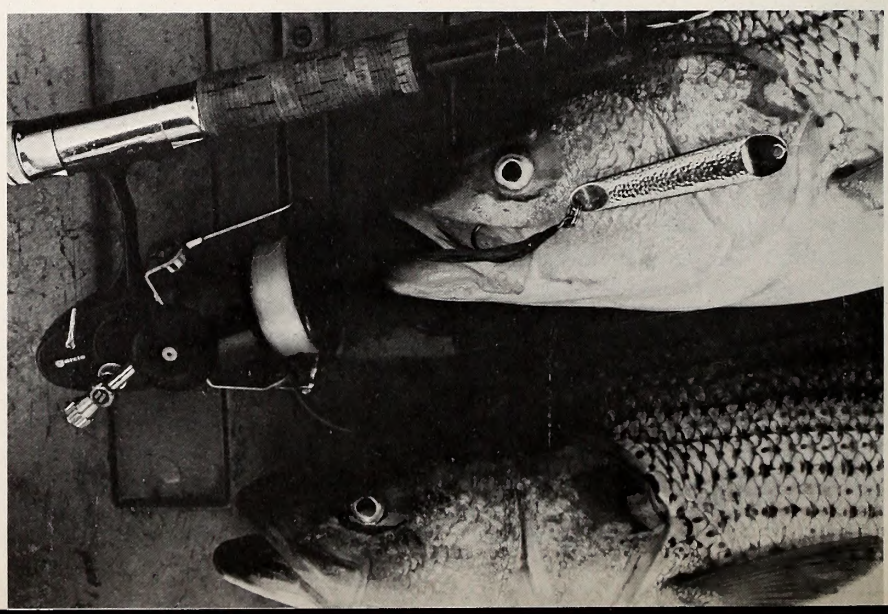
Since that experience with rockfishing at night on Gaston I've done considerable angling of this type and have had consistently good results when certain factors were present. Increasingly, large freshwater reservoirs are being blessed with the addition of this hard-fighting gamester and a small coterie of anglers are fast learning how to outwit these crafty striped fish. Few realize, however, that the rockfish does the majority of its feeding at night. Good fishing in evening and morning hours is generally just the overflow from a frenzied night of busting and gobbling shad and shiners.

The best and easiest way to find such night feeding activity is to check around bridges that act as constricting agents, like a belt tightening around a plump belly, on the large bodies of water on each side. The stripers find shelter, food, and highly oxygenated, flowing water at these locations, and these are the three factors needed to bring them swarming like flies to a dead pig in the sunshine.

Several impoundments throughout North Carolina are stocked with stripers. Give these lakes a try at night with a few minnow-imitating plugs or bucktails, and I guarantee you won't be inclined to have this freshwater immigrant deported from the inland fishing scene as an undesirable alien.

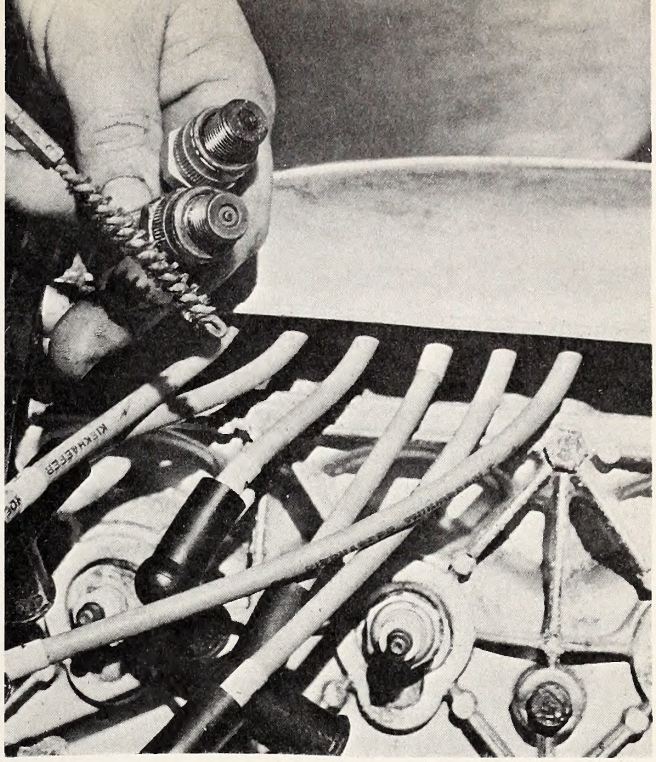
When the stripers run big, heavier tackle and metal lures normally used in the surf may be required. These are powerful fish and can cause some problems when you're fishing around obstructions such as bridge piling. You may be glad you have 20-pound test line.

PHOTO BY JOEL ARRINGTON

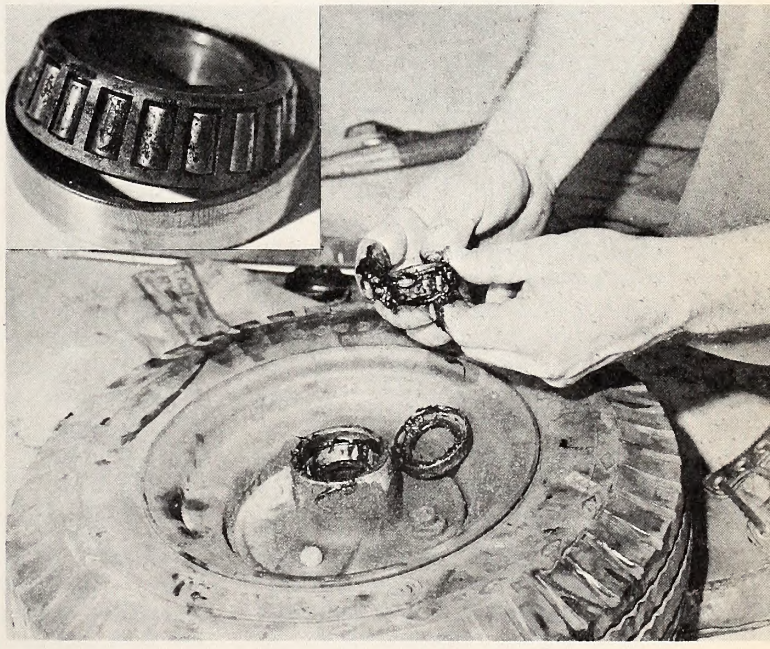


Stem to Stern

BY ED JENKINS



Spark plugs (above) should be cleaned with a wire brush or in a solvent. Signs of wear, cracks or chips in the porcelain indicate a need for replacement. Trailer wheel bearings (below) should be inspected at least once a year. Salt water is a wheel bearing's worst enemy (insert). To prolong bearing life, avoid submerging trailer wheels when launching and recovering boat.



• The first boating trip of the year finds many boats tied to docks or sitting dead in the water at launching ramps while frustrated operators attempt in vain to start those */#! outboard motors.

Unless an individual has a flushing adapter which connects to the engine allowing it to be operated out of the water, he may not know if the engine will run until the boat is actually launched. Our advice to this individual is to make his first boating trip close to home to avoid wasting too much time and fuel if the outing is cancelled by an uncooperative outboard.

If the motor will not start, one can forget about going on the water that day or for a few days. Marine dealers swamped with gummed up carburetors and fuel lines full of trash and water will probably be unable to get to another motor for a while.

The solution to the problem is not what can be done each year to get the motor started, but what should be done to the motor prior to winter storage to keep it operational. The old adage "An ounce of prevention is worth a pound of cure" certainly holds true here.

If the outboard motor had been "winterized" before the long months of storage, chances are a quick battery charge would have been all that was necessary before the year's first outing.

There are a few simple checks a boat owner will want to make before the boat is first used this year.

• **The Boat** Inspect the hull of the boat for damages. Fiberglass boats are highly resistant to damage, but surface defects have a tendency to spread and may result in loss of structural strength. A small can of fiberglass putty, or gel coat, may be all that is required; however, structural damage may require more attention. For do-it-yourselfers, there is an excellent pamphlet available from the Owens-Corning people entitled "Repairs of Fiberglass Boats." This step-by-step guide is available free of charge from Owens-Corning Fiberglass Corporation, Fiberglass Tower, Post Office Box 901, Toledo, Ohio 43659.

A brief check of the steering system may prevent an especially dangerous situation from occurring. Some systems have a grease fitting located on the cable near the motor that serves to lubricate the steering cable. This fitting as well as the steering shaft should be lubricated. Boats utilizing plastic coated cables and pulleys to steer the engine should be checked for cable wear and loose fittings. Tighten loose cables.

• **The Motor** Inspect the spark plugs. Clean and re-gap the plugs or replace them if in doubt. Properly operating spark plugs are a basic key to good engine performance.

If the gearcase was not drained when the boat was stored, it should be drained and refilled with a recommended lower unit lubricant.

Check the propeller. If the blades are bent, straighten them out. If the blades are nicked or too worn, have the propeller reworked or get a new one. Even small nicks or a bend in just one blade can greatly reduce a motor's performance. Remove the propeller and check the propeller shaft to ensure that no fishing line, string, or wire has wrapped around the shaft.

On electric start outboards, make sure the battery is fully charged. Clean the terminals; a light layer of grease will help prevent corrosion.

• continued on page 27

Human Versus Woodpecker .... a Habitat Report

by M. Dale Arvey
Charlotte
Illustration by Josette Gourley

FREQUENTLY homeowners are bothered by the tapping of woodpeckers as they test out the wooden portions of homes, apparently in an attempt to nest. At times it has been found that various kinds of birds are either attracted to, or wish to do battle with, their reflections in glass panes, disturbing the resident people and often being killed by their flying into the glass. And, it seems that some woodpeckers simply use the wooden parts of houses to tap out a refrain, one communication device of birds of this group.

The majority of the complaints seem to be traceable to flickers, which are frequently difficult to discourage from such activities, but occasionally other species of woodpeckers are also culprits. One such instance has recently come to light in a quite fashionable development near Charlotte, North Carolina, where the attempts of the developers to maintain a natural setting have resulted in something of a backfire, in that a large and healthy population of pileated woodpeckers has been maintained, and some of the birds are fighting back.

The development, Riverview, is just southeast of Charlotte but actually in South Carolina, near Lake Wylie; the homes are built to fit into the environment in a natural fashion, with forests left to create a rural locale. The residents appear anxious to keep this setting intact, they maintain feeding stations for birds, they have put up nesting boxes, and certainly are not anxious to harm any species that wishes to share their environment. But there have been problems.

In 1974, before a home was completed, a most persistent pileated woodpecker was found to be damaging the siding of the house, could not be discouraged, and finally the builder was forced to ask help and have the bird destroyed. It was mounted by a taxidermist and is presently to be seen at the complex. Currently another bird is working diligently on a house already finished, apparently trying to make an entry into the siding just as it reaches the eaves. This bird is being chased away whenever it can be heard, but does not seem to get the idea that its explorations would be more profitable in some dead tree! Hopefully the efforts to run the bird off will be successful before the damage is too great or a decision is made to make a permanent solution by shooting the bird.

In the Fall of 1974 a curious incident occurred in that a pair of birds took a liking to (or a hatred of) a particular patio apartment that had a pair of sliding glass doors to the patio, also covered by sliding screen doors. The occupants were delighted to be able to photograph the two large and striking birds from a distance of but a few feet, until the two began a campaign to destroy the screen doors. One screen was ripped from its side connection, another ripped throughout the width of the panel. The occupants left on a short Thanksgiving vacation, and on their return discovered that one of the birds, having apparently gotten between the two portions of the door, could not extricate itself and died in that position. The carcass was thrown away, and the other of the "pair" has not been seen since.

Prior to the death of the bird, a number of photographs were taken of the birds, as they did not flush from their position of onslaught until the actual door was tapped. There is no doubting the identity of the species, as the distinctive markings are clear in the closeups.

There is no set pattern to follow when a magnificent bird of this sort clearly refuses to accept man as a close neighbor. We cannot help but admire a species that puts up a fight to retain its habitat, rather than being encroached upon and being forced to retreat more and more, finally becoming extinct. A relative of the pileated woodpecker, the ivory-bill, is of course an example of a species that could not or would not adapt. On the other hand, we should be able to retain portions of the original habitat and keep the birds happy without their needing it all. There are all too many developments that start out with the bulldozer and level acre after acre to decide to perpetuate this approach. There must be a method by which the natural surroundings can be kept and yet not have structural damage produced by such species, nor the hammering at dawn by persistent neighbors that wakens one so rudely!

In this area, one hopes that the occupants of the homes arrive at a method of compromise, in order that they can enjoy the natural surroundings, including the wildlife, or at least to decide that the presence of other species is in itself value enough to permit certain inconveniences. ⬍⬍

Out of The Past

While clearing out old cabinets at the Campbell Folk School, Brasstown, N. C., a unique craft and music school in the southwestern corner of North Carolina, some of our finest old carvings were uncovered from years of dust and neglect. We marvelled at the historic artifacts one by one as they were "unearthed" — notably during our Golden Anniversary year. Asking ourselves why these lovely items were tucked away, we felt that, perhaps, at the time they did not seem so important. After all, the interesting person who carved them was close at hand — his personality a part of everyday life. But now with some of the original carvers gone, their carvings seem especially rich with character — fresh reminders of these old friends of the school.

The period of the carvings discovered was around 40 years ago, when the program was just underway. Everything was new, and each carver was trying out new faces, new poses, new creations. It was this experimentation that produced such innovative and unique carvings, bringing together the character of the carver and the animal or figure being carved.

The creche scene has always been a favorite at the school, and several unique sets were found. Of these the first nativity scene carved at the school was the most prized. However, the children's creche — one in which all the human figures were children rather than adults — brought sighs of enjoyment from us all. While the lovely white holly creche sets of today are inspiring in their pure and smooth features, the pine creche was equally spiritual with its earthy beauty.

Animals were uncovered with unique characteristics. The carvers of the scratching dog, the pudgy, baby elephant, and the sly fox had truly captured the living essence of their subject. Many creatures were tenderly carved with their babies, such as the mother possum and little ones on her back, or the mother cat taking care of her three kittens.

Of course, popular demand has dictated certain patterns and styles over the years. Gradually our carvings have become more standardized — that is, the best ones have been requested over and over, and our carvers have responded to these requests. Our carvings today are equally as beautiful as our original carvings, except now the quirks and smirks are gone from the faces or figures. Many of the carvings discovered were by carvers who still work for the Folk School. We marvelled at how they have progressed over the years; some with years of experience have a personal history recorded in these carvings.

We are truly fortunate to have made such a discovery. Plans have already begun for a museum in which to properly display these artifacts, with the advice of the Museum of History in Raleigh. Soon these treasures will be a living part of the Folk School — for all to enjoy.

For further information on any of the school's activities, contact the Campbell Folk School, Dept. W, Brasstown, N. C. 28902.

Look and See

by Ches Crow
Raleigh

Shame on us. The mess we've made of our landscape is just another indication of our general attitude about the quality of the life we lead.

• Robert Ruark once wrote this piece of advice: "Look at everything you see and listen to everything you hear, just like you were brand new come from another world and think about all those things and how they got here."

Birds, trees, water; these are just a few of the things that I constantly observe. As a wildlife illustrator these are very important to me. Maybe I look too closely at our environment, but I often come away from a field trip or fishing trip sick at heart.

When was the last time you walked through a wooded area or by a pond or lake and did not see some kind of pollution? By this I am not speaking of industrial pollution, for too many times, we are eager to blame the big industries. What I am speaking of is "People Pollution"—beer cans, paper, tires, old stoves, refrigerators—just general junk choking the land and waters.

Nearly 300 years ago the first settlers found this country to be the most beautiful and bountiful land they had ever seen. But within less than a lifetime we have allowed much of our country to look like an enormous junk yard.

Taking in consideration that we have done most of the damage within the past 70 years, there are only a few places that are not contaminated. This contamination is not only an eye sore, but it is slowly impairing wildlife. And in the process we are destroying the plants and trees that are the homes of many of our wildlife species.

Since man is the most intelligent being on the earth, we have a responsibility not only to ourselves but to the other creatures that are our neighbors. Here again the federal, state and local governments are trying to help with many programs, but we as individuals cannot leave the work up to these agencies. We must take a personal view of our world, and I am sure that the majority of you reading this **are** interested in helping.

A few weeks ago I was walking along one of our many beaches. I was appalled at the way some people treated the beach and ocean with nothing but contempt. Many times we have seen folks, while fishing, thoughtlessly throw paper cups, bait containers, and general refuse in the water or on the beach.

Several years ago during his voyage of RAII, Thor Hyadahl wrote of finding trash and masses of oil far at sea; Captain Jacques Cousteau has often spoken of similar findings. This kind of pollution will not kill the visible sea life, but it is slowly destroying the plankton that is important in generating oxygen for life on our planet. If we continue to pollute these sea areas and destroy land plants, where are we going to get oxygen to breathe? We see this now, in our larger cities where respiratory problems are on the increase.

What is the answer? I must say that speaking as a private citizen and not as a scientist or an ecologist, I don't have the answer. One purpose for writing this is to have a talk with you and hope that we as average citizens will be more careful . . . no, not more careful, we should become more than careful, we must become almost fanatic as far as environment is concerned.

We are but part of the earth's population; we are as dependent on the animals and plant life as they are on us. Each partner has his part to do in this world and man has the larger task. Man is the only one that can change this world for better or for worse and it all starts with you and me.

Through the years man has exploited nature to the point that many animals are now extinct, yet smarter men have saved or started to save what we have left. Let's be like the smarter men, and not make man the next extinct animal. We have much to lose. ⬍

New Book

There have been quite a few books published on wild flowers over the years. Some are very superficial, most are at least interesting, and a few are helpful, beautifully illustrated, and right to the point. One recently published that falls into this latter category is entitled "Wildflowers of the Southeastern United States" by Wilbur H. Duncan and Leonard E. Foote. It is published and for sale by the University of Georgia Press, Athens, Georgia 30602 at $12.00 each. And at today's printing costs, a volume of this stature and mechanical excellence, is really a bargain.

I didn't count them, but there must be nearly 500 full color plates and over a thousand species described. The descriptions do use metric figures, so the centimeter rule on the inside of the hard cover is helpful for those of us who still don't convert well in our minds.

There may be wild flowers in North Carolina that aren't covered in this beautifully bound book (6" x 9", 296 pages), but I couldn't find any. It's almost too pretty to take in the field, but that is what it is obviously designed for with its rugged, water resistant cover and binding.

Telling people to "leave them alone" is like talking against motherhood, the flag, and apple pie. Fawns and other wildlife babies are almost never abandoned by their parents, but on rare occasions are orphaned by motor vehicle traffic or illicit hunting. It is unlawful to take the young of any game species.

PHOTO BY REX G. SCHMIDT

Grouse Newsletter

"I will soon publish a new grouse hunting newsletter and would like to send it to as many grouse hunters as possible". Thus writes Ken Szabo, 17130 Chatfield, Cleveland, Ohio 44111. If you are a grouse hunter, prospective hunter, or just a grouse fancier, Ken would like to hear from you and put you on the mailing list.

Appalachian Trail Conference

The Twentieth Appalachian Trail Conference Meeting is to be held at the Appalachian State University in Boone, N. C., June 21-23. Everyone interested in this famous trail is welcome to attend. You need not pre-register, but if you should care to do so, contact Mr. Claude E. Griffith, TEC, Bldg. 89, P.O. Box 511, Kingsport, Tenn. 37662.

Jerve Harmon Selected for Post

Jerve Harmon, President of Carolina Quail, Inc., Route 5, Statesville, has been selected as the new vice president of the Southeastern Game Breeders and Hunting Preserve Association. His election came at the 12-state convention held in Athens, Ga. last April. In addition to being named vice president, Harmon was chosen for a new three-year term as a North Carolina director.

State Employees Please Note

The North Carolina State Employees Association, Inc., is in the midst of its annual membership drive, seeking through greater numbers to become a stronger voice for state government employees on matters such as salaries, fringe benefits and job rights.

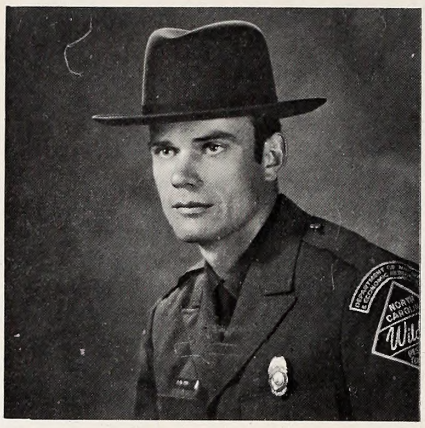
The 1975 campaign officially got underway April 30 and will run through September, with a goal of exceeding last year's record membership effort which saw 22,400 state employees join the NCSEA. With last year's successful drive, the NCSEA became the eighth largest independent public employee organization in the country.

Association membership, strictly voluntary, supports fulltime representation for state employees before bodies such as the General Assembly, retirement system and Office of State Personnel, in addition to offering a number of non-legislative programs such as life insurance and group buying.

For more information, contact Lynn Wilson, N. C. State Employees Association, P.O. Box 2888, Raleigh, N. C. 27602.

B. F. "Red" Harrison of New Bern received a 1974 first place award from Field & Stream magazine for this 10 pound 6 ounce bass in the 8-pound test line class. He also was awarded a Gold Bass pin from Garcia.

KNOW YOUR PROTECTOR



Travis M. Whiston

Wildlife Protector Travis M. Whiston was born May 7, 1947, in Yancey County. He is the son of Mr. Naff Whiston and the late Mrs. Linda Silver Whiston of Burnsville, N. C. He attended Cane River High School. Travis is married to the former Mary Etta Mehaffey of Robbinsonville, N. C. They have one son.

Prior to his employment with the N. C. Wildlife Resources Commission, Travis served two years in the U. S. Army, serving 15 months in Viet Nam. Travis completed the Wildlife Protector's In-service Training School in June 1971. He was employed as a Wildlife Protector trainee in June 1972 and stationed at Newton and Robbinsville. In June 1973, Travis was transferred to Waynesville in Haywood County. He has completed one eight-week in-service training school.

Road Kill

IMAGINE for a moment that it's late on a sultry spring night. You're late getting home, so you add a little pressure to the accelerator of your car. Then suddenly, in front of you, two points of greenish light appear.

They're eyes. And they stare at you wth something that looks like pleading.

Going so fast, however, it is dangerous to swerve or hit the brakes, so you scrunch up in the seat and grimace. More than likely, you hold your breath . . . waiting . . . dreading what is to come. Then there it is, that sickening thunk; as an animal collides with the undercarriage of your car.

It's a familiar experience, right? It's bound to be according to some figures supplied by Ralph Bryan of Ivanhoe, North Carolina. For two years, Bryan kept a record of the number of dead animals he saw along the highways of North Carolina. His figures are downright staggering, too. They suggest that the automobile is a vastly underrated threat to domestic and wild animals.

"I don't pretend that I've made a scientific study of the problem," Bryan cautioned. "I just cared about the situation and wanted to show people what's happening."

He's done that all right. Between June 12, 1972 and May 3, 1974, Bryan saw a total of **1,462 dead animals** along the highways. Having traveled 57,409 miles during that period, that's an average of one dead animal for every 39.3 miles.

The breakdown by species went like this:

574 opossums
237 rabbits
115 raccoons
313 dogs
153 cats
50 squirrels
12 foxes
7 skunks
1 hog

The worst week, Bryan reports, was April 1-7, 1973 when he saw 43 dead animals. That included 26 opposums, 3 rabbits, 2 raccoons, 8 dogs and 4 cats.

"When you start looking for dead animals, it's amazing how many you see," Bryan said. "They're everywhere . . . all year round."

Bryan's advice was 'Slow down and be careful'.

"I sure have since I made the study," he added. **Don Causey**

CROWS

• continued from page 5

nests of new-born cottontails.

There are many items in the diet of crows which can be put on the credit side of the ledger. They eat an almost endless variety of worms, grubs, beetles, and other insects and insect larvae. About three-fourths of their diet is vegetable matter, and one-fourth animal material. In many localities where buzzards are not present to assume the responsibility for removing carrion, crows perform the service nicely. They take a few live animals such as field mice or immature cotton rats, but such occurrences are rare.

Enemies

Crows have a number of enemies besides man. Hawks and owls wage constant war on crows, and their nests may be plundered by red squirrels. Little is known regarding infections by diseases or parasites.

Migration

Although crows migrate with nothing like the spectacular flight of waterfowl, there is a definite seasonal north-south movement. They leave the northern extremity of their nesting grounds in the fall and migrate southward, to return again in the spring. It is during their winter visitation that they gang up in huge rookeries. The rookeries, or roosts, are strictly a night-time proposition. Toward sunset they may be seen wheeling in for miles to the roosting spot. In some of the midwestern roosting areas, the evening flight of crows from all directions to the rookery must be seen to be appreciated. Gunners who place themselves in concealment close to the roosts get in some fine pass shooting. Early in the morning the birds spread out from the rookery like spokes in a wheel. They have been followed as far as forty miles in their daily migration to seek food. During the winter aggregation period crows seem to get a sense of safety in numbers. They invade small towns, alight on peoples' lawns, and raid backyard garbage cans. Newspapers (in the midwest) have run pictures of crows taking food from dogs' feed pans, the dogs apparently having given up trying to keep the raiders away.

Control

No thinking person would want to see crows completely exterminated, but all agree that they must be kept under control. Hunters can shoot them under new Federal Regulations, and pest-control experts can dynamite them to their heart's content (special permit required in North Carolina), but like flies, taxes, and the indigent, crows will always be with us—to be cussed or praised, as the case may be. ▲▼

STEM TO STERN

• continued from page 20

If there is gas from last year in your fuel tank, pour it out. Using old gas in an outboard motor may result in an engine that is hard to start and does not run properly.

• **Boat Trailer** Rust spots can be removed with a stiff wire brush or by sanding. Cover with a rust-inhibiting paint. Inspect and lubricate the winch, rollers, tilt lock and hinge mechanism.

Check the tires for wear and proper inflation. The small tires found on most boat trailers require much higher air pressures than automobile tires. Under inflated tires on a boat trailer will flex causing heat to build up thus increasing the chance of a blowout.

Check the inner and outer wheel bearings for wear and proper lubrication. Wash the bearings with kerosene. If pitted, the bearings and bearing cups should be replaced. After inspection or replacement, thoroughly cover the bearings with water-resistant grease before placing them in the wheel hub.

• **Safety Equipment** It's a good idea to inspect all safety equipment to make sure it is aboard and in good working order.

Inspect all personal flotation devices for mildew and wear. Buoyant cushions that have been sat upon or which were used in the water as swimming aids may no longer provide adequate flotation. If in doubt, replace them.

Check the gauge on the fire extinguisher to make sure it is properly charged. It is a good idea to turn dry chemical fire extinguishers upside down and strike the bottom of the extinguisher with the palm of the hand. This will keep the extinguishing agent from becoming caked in the bottom of the extinguisher.

Running lights and trailer lights should also be checked in the inspection.

Getting a boat ready for the summer may sound like a big task, but it really isn't. It can even be fun, and if one plays his cards right, he may be able to make it a family project and get a boat wash and wax to boot! ▲▼

ADDRESS CHANGE NOTIFICATION

Name_____

Old Address_____

_____

_____

New Address_____

_____

_____

Zip Code_____

IMPORTANT:

Enclose present Address Label

Please notify us promptly of change of address.

Use this blank to subscribe NOW — $2.00 a year

Add $1.00 for overseas postage

No stamps, please

WILDLIFE IN NORTH CAROLINA New ☐

325 N. Salisbury St., Raleigh, N. C. 27611 Renewal ☐

I enclose $_____; send me WILDLIFE IN NORTH CAROLINA for_____years starting with the earliest possible issue.

Name_____

Street or Route_____

City_____ State_____ Zip Code_____

Due to rising production and printing costs and likelihood of periodic increases in the subscription price for WILDLIFE, a limit of FIVE YEARS is being placed on new and renewed subscriptions.

Summer Solitude

Charlotte artist Joyce Rhames takes us to the beach for a stroll near the surf. Help k... p it clean and beautiful, please.

1 LIBRA4S** 1SAMPLE9999
STATE LIBRARIAN
LIBRARY BLDG
6 RALEIGH NC 27601

LITHO BY THE GRAPHIC PRESS, INC., RALEIGH, N. C.

NER
C45
7:39/7
North Carolina State Library
Raleigh
N. C.
Doc.

Wildlife

IN NORTH CAROLINA

JULY 1975

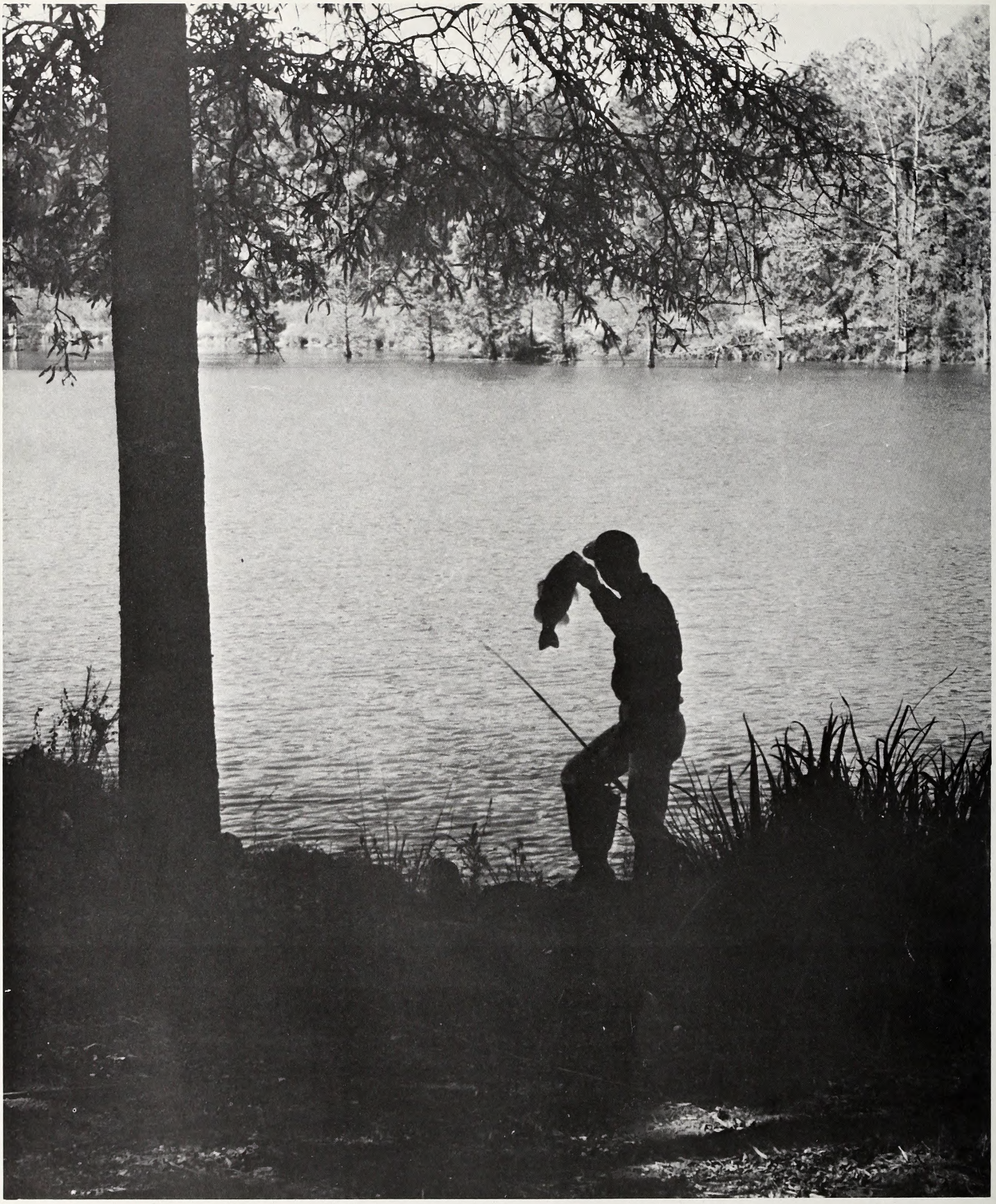


PHOTO BY F. EUGENE HESTER

Nice Fish

Probably the better fishing of the day will be early in the morning or late in the afternoon from now on. Bass, like this nice one, generally prefer the cooler water.

An Equal Opportunity Employer

North Carolina State Library
Raleigh

STATE OF NORTH CAROLINA

JAMES E. HOLSHOUSER, JR.
GOVERNOR

DEPARTMENT OF
NATURAL AND ECONOMIC RESOURCES
JAMES E. HARRINGTON, JR.
SECRETARY

NORTH CAROLINA
WILDLIFE RESOURCES COMMISSION

ROSCOE D. SANDLIN, CHM. _ JACKSONVILLE
JAY WAGGONER, V. CHM. _ _ _ _ GRAHAM
ROY A. HUNEYCUTT, SECY. _ _ _ _ LOCUST
W. K. ANDERSON _ _ _ _ _ _ _ NEWLAND
WALLACE E. CASE _ _ _ _ HENDERSONVILLE
D. JACK HOOKS _ _ _ _ _ _ _ WHITEVILLE
DR. LATHAN T. MOOSE _ _ WINSTON-SALEM
V. E. WILSON, III _ _ _ _ _ _ _ ROCKY MT.
ORVILLE L. WOODHOUSE _ _ _ _ _ GRANDY

CLYDE P. PATTON
EXECUTIVE DIRECTOR

EUGENE E. SCHWALL ROBERT B. HAZEL
ASSISTANT EXECUTIVE DIRECTORS

DIVISION CHIEFS

REX GARY SCHMIDT _ _ _ _ _ _ EDUCATION
RICHARD B. HAMILTON _ _ _ _ _ _ _ GAME
W. DONALD BAKER _ _ _ INLAND FISHERIES
DONALD E. CURTIS _ _ _ _ _ PROTECTION
CHARLES R. FULLWOOD, JR. _ MOTORBOATS
AND WATER SAFETY

The Editor gratefully receives for publication news items, articles, and photographs dealing with the North Carolina out-of-doors, but reserves the right to reject materials submitted. Full credit is given for all materials published.

Have you moved recently? Change your address promptly. Either send in an old mailing label from your magazine along with new address or type or print complete old label information exactly as it appears on your magazine.

WILDLIFE IN NORTH CAROLINA is published at the Wildlife Resources Commission offices, Albemarle Building, Raleigh, N. C.

Phone Number AC 919/829-7123

Second class postage paid at Raleigh, North Carolina 27611.

* * *

SUBSCRIPTION RATE—$2.00 per year (12 issues). Add $1.00 for overseas postage except APO, Canada and U. S. possessions. Back issues —$.25 per copy plus $1.00 minimum for handling and mailing; back issues may not be available. Send check or M. O. payable to WILDLIFE RESOURCES COMMISSION. Stamps cannot be accepted. Any employee of the Wildlife Resources Commission may accept subscriptions, or send to WILDLIFE, Albemarle Building, 325 N. Salisbury Street, Raleigh, N. C. 27611.

Wildlife circulation this issue 73,900

Wildlife IN NORTH CAROLINA

The official publication of the NORTH CAROLINA WILDLIFE RESOURCES COMMISSION, Raleigh 27611. A monthly magazine devoted to the protection and restoration of our wildlife resources and to the improvement of hunting and fishing in North Carolina.

VOL. XXXIX NO. 7 JULY, 1975

IN THIS ISSUE

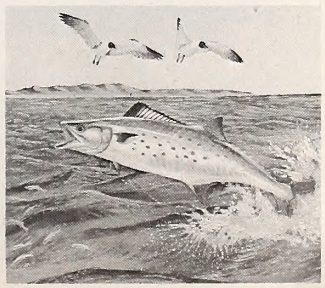
Structure Fishing for Bass
by Bill Wicker . . . . . Page 4
Long Ago and Far Away
by Bill McDonald . . . . . Page 6
Fish Attractors
by Rod Amundson . . . . . Page 8
The Wildlife Protector
by Nancy L. Blount . . . . . Page 9
The Raccoon
by Rod Amundson . . . . . Page 10
Stream Preservation
by Frank B. Barick . . . . . Page 12
Alligators
by Steve Price . . . . . Page 14
Stem to Stern
by Ed Jenkins . . . . . Page 16
Resource-O-Gram . . . . . Page 17
William Faver
by Robert Marks . . . . . Page 18
The Giant Terrestrial Flatworm
by Rowland M. Shelley . . . . . Page 20
Common Surf Fishing Goofs
by Jim Dean . . . . . Page 21
The Ordeal
by Charles D. Lail . . . . . Page 22
The Real Thing for Trout
by John Crew . . . . . Page 23
The Blue Monsters of Tillery
by Jerry Rushing . . . . . Page 24
Back of the Book . . . . . Page 26

EDITORIAL STAFF

DUANE RAVER _ _ _ _ _ _ _ _ _ EDITOR
LUTHER PARTIN _ _ WRITER-PHOTOGRAPHER
JIM DEAN _ _ _ _ WRITER-PHOTOGRAPHER
TED DOSSETT _ _ _ WRITER-PHOTOGRAPHER

An objective of all levels of government should be to achieve and sustain a balance of the social, ecological, and economic benefits derived from natural resources. Without such balance none of the factors on the scale will be worth weighing.

Lots of fishermen head for the salty waters during the summer, and it's no secret that they often produce better than the inland spots when the weather warms. This is a Spanish mackerel chewing up bait fish just off the dunes and surf of the outer banks. You may have to let the small spoon drop way back of the boat when you're trolling. Painting by Duane Raver.



Structure Fishing For Bass

by Bill Wicker

THERE has been a lot happening on the fishing scene lately. The simple relaxation of taking a wooden flat bottom boat, a can of worms and your favorite rod and reel or cane pole has turned into a sport that can even earn a living for some. This new found popularity of fishing has brought on such things as sleek fiberglass boats with up to 150 horsepower outboards, equipped with depth finders, light penetration, oxygen content and temperature indicators. New terminology has also come along with this change; new words such as structure fishing, jump lures, migration route, break line, presentation and many others.

Structure fishing has been around for some time but has not been widely publicized until the last couple of years. Actually you have probably been catching fish in areas that have structural importance but did not realize it. "Structure" is defined in Buck Perry's "Spoonpluggers Glossary" in his book "Spoonplugging—Your Guide to Lunker Fish" as "The bottom of the lake extending from shallow water to deep water with some unusual features that distinguish it from the surrounding bottom area," which means such things as sudden depth changes—shallow areas to deep areas, or in areas of change which have sanctuaries, such as rock piles, brush piles, fallen trees or tops of underwater tree areas. It could also mean breaks in structure such as underwater roads, bridges or any other distinguishing factor such as I have mentioned.

These areas provide fish with points of desired light penetration, oxygen and temperature levels. They also provide cover for feeding and stop over points in their definite patterns of migration from feeding areas to resting or dormant areas. These areas are where the fish will be caught consistently.

Structure fishing is learning to recognize where these areas of migration or sanctuary are most likely to occur and then to effectively give proper presentation of your lures or live bait and catch fish in these areas.

It is an accepted fact that only 10 percent of the available water area holds large fish in quantity. This 10 percent of available fishing territory is what you want to find and then, only then, will you be able to catch fish consistently, and consistency is what good fishing is all about.

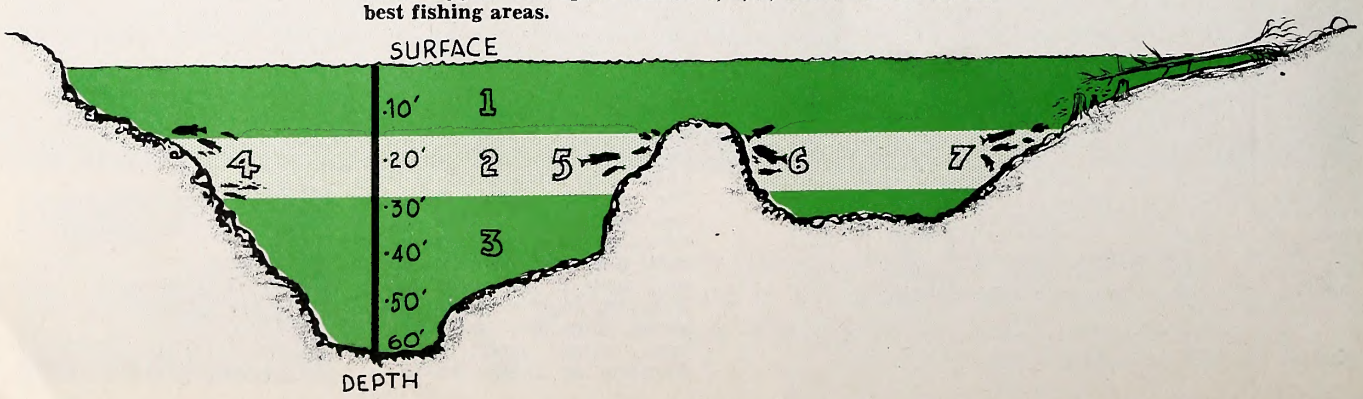
There are several methods used to determine structure, a few of which I would like to cover to get you organized in your thoughts and to realize how simple it can be to utilize structure fishing to match your budget or your needs.

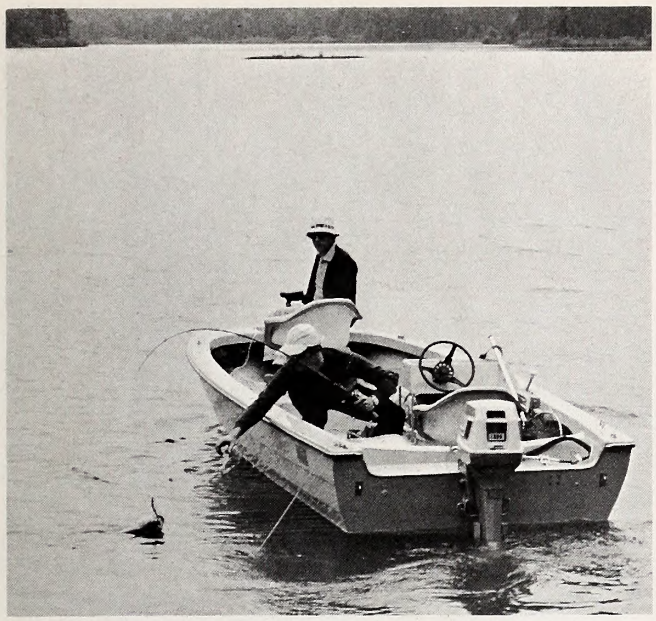
The methods most commonly used include electronic equipment, the use of maps or just a weighted line with knots to mark depth, or a combination of any of these.

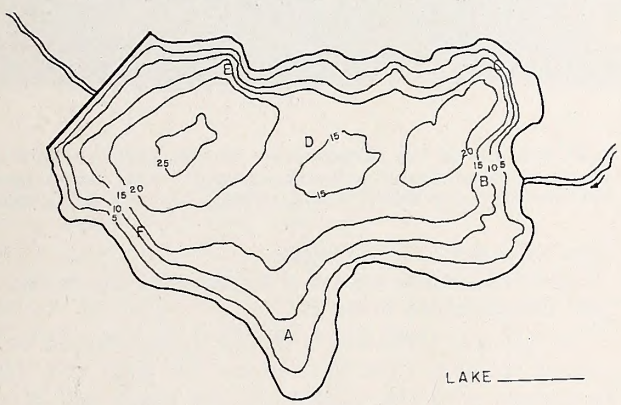
The electronic depth finders or fish finders is a method most pros and dedicated fishermen use. Powered by a small electrical supply, these units give depths on a screen or scope of the area around your boat. By the use of this equipment, the fisherman is able to determine depth variation and with some practice, the type of bottom and/or any cover which can be found on the bottom. This method is especially useful in areas where maps are not available or in new areas to quickly get oriented. These units range in the area from about $50 up to $300.

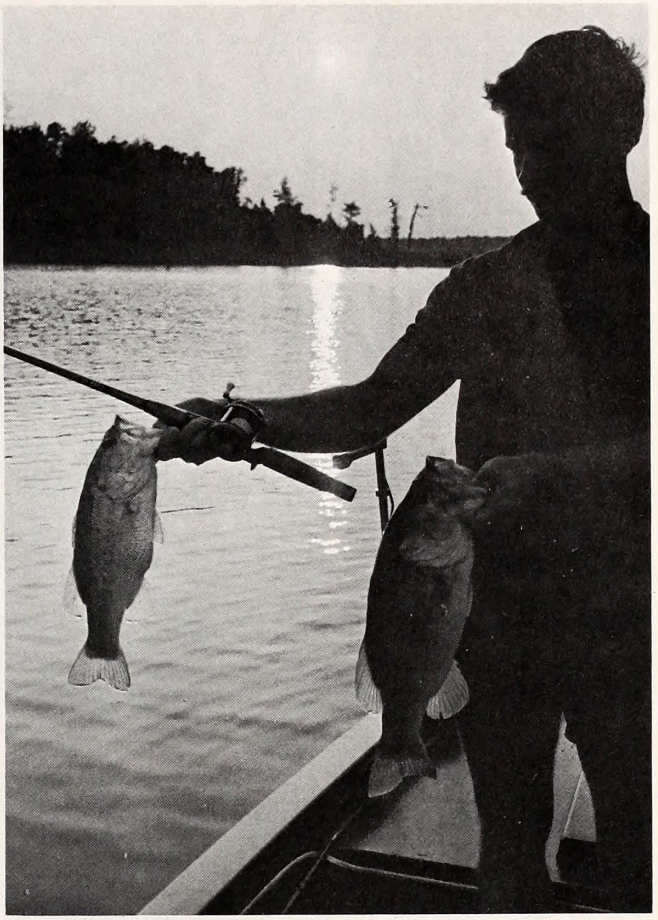
If you plan to fish some of the larger reservoirs, the operators of the impoundment may have hydrographic

The summertime depth of the cooler reservoir waters may vary, but section 1 is usually the least productive. Section 2 usually has the coolest waters which still contain adequate oxygen. Section 3, may be cooler still, but contain little oxygen. The spots labeled 4, 5, 6, and 7 should be the best fishing areas.









For fish like this, you may have to find where they're hiding. It might be around a little structure like the island in the background (upper left). The sketch map at left is the one mentioned in the text below.

or contour maps available for your use. The use of hydrographic or contour maps is a method which is useful for pretrip planning and also for use in actual fishing. Hydrographic maps are maps which show the depths by the use of lines which run along a certain depth of water. The lines are spaced according to depth change and are usually given in 1' to 10' intervals. If these maps are properly utilized they can be a valuable tool for any fisherman.

If these maps are not available you may want to make a map of your own by use of the weighted line method. In order to do this, just rough out a sketch of the lake or pond you will be fishing and take depth readings and mark them on your sketch. Some kind of rough scale should be used so you can keep things in about the proper perspective. This method is obviously slower, but with some practice and perserverance you will be able to have a good idea of what the structure is. This method is not completely accurate but can be effective.

In order to more fully understand how to use depths and structure guides, you should study the accompanying map, and follow the explanation of each labeled area.

Point A, is in an area of gradual depth change and in most cases would be considered as an area of little concern. It should be remembered however, that this area could provide a shallow feeding area, but only under certain conditions.

Point B, is an area of importance for a couple of reasons. It is an area which has fairly rapid depth change and also an area where the incoming water, provided by the creek, allows for such things as varied water temperatures, and oxygen content, and may also provide a different color water, which also has importance.

Points C and E are of relatively the same importance and in my opinion are two points of extreme interest. Both points provide the rapid depth changes required for good structure with good areas of migration between points C, D, and E.

Point D is a trough area which normally would be an area which will hold fish under certain conditions. This is an area to be checked at different times and under different conditions.

Point F is another area of importance because of the quickly changing depths which lead directly to deep water.

Thus, I would rate the points noted as follows: E, C, B, F, D, A. Obviously, this is not the only way to list the points I have discussed but merely an attempt to help you better understand the reasons behind my choices.

Perhaps this article has stimulated your interest enough to try something a little different; have solid reasons for your "change" and hopefully gain more confidence. The things I have discussed were brought about by people willing to try something new. No matter how new your methods may be it all boils down to the same old reason: to have fun and catch a mess of fish.

Long Ago and Far Away

by **Bill McDonald**
Carolina Beach

1966, and one of the biggest loads of reef fish ever laid out on the dock at Carolina Beach—groupers and red snappers. See anybody you know? Good catches are still being made.

1927, and the living was high, wide, and handsome. Lindbergh flew the Atlantic; Ernest Hemingway had just come forth with his first major literary effort as a struggling young American writer in Paris, "The Sun Also Rises;" the stock market crash was two luxuriant, wonderful years away; the term "flapper" was in vogue, and it aptly described the young ladies of the times; the Babe swatted 60 home runs for the Yankees; and upstate tourists were swarming Carolina Beach like it wouldn't be there in 1928.

On the periphery of these times was another noteworthy achievement. A headboat fishing dynasty was being born at Carolina Beach.

Paint a picture in your mind's eye of a healthy, flamboyant young man in his mid-teens. Put behind him a background of commercial fishing with nets for shad in the Cape Fear River and hard work in the tender years as a general helper aboard his father's passenger and freight river boat. Give him credit as a young businessman selling peanuts aboard the Wilmington-Carolina Beach train that carried the good-spirited, vacation-bound passengers. Wind up his main spring as a helper with the family-owned concessions up on the front. Top it off with a love for boats and fishing and having the skills to take a row boat through the surf with some ease while headed out to sea. That was Carl Winner in 1927.

"I was use to rowing our skiffs offshore and catching bottom fish—black bass, pigfish, red mouth, flounder, trout, sailor's choice—to sell to the summer tourists," Carl opened. "Sometimes a person or two would ask to go along to have a go at the fishing themselves in return for pulling the anchor, and I'd give them a mess of fish when we got back to the hill.

"After a while I was doing so well I started charging $1.50 for the trip. We didn't take many because those boats were only 22 and 24 footers," Carl added.

Carl occasionally used a sail to help him reach the offshore fishing grounds, but he more often rowed the boat with the long surf oars.

But the ultimate answer was just over the horizon—the first outboard motors.

"In the late 1920s the outboard motor seemed to be coming in style with the commercial fishermen from Seabreeze, who also fished off the south end of the boardwalk, and I bought one.

"However, it didn't prove too practical, so I continued to row the skiff a few more trips until one day I saw another man go by in his boat with a Johnson Sea Horse. That seemed to work so well I bought a 14-horse Johnson outboard. That was just about as fast as I ever rode in a boat," Carl said.

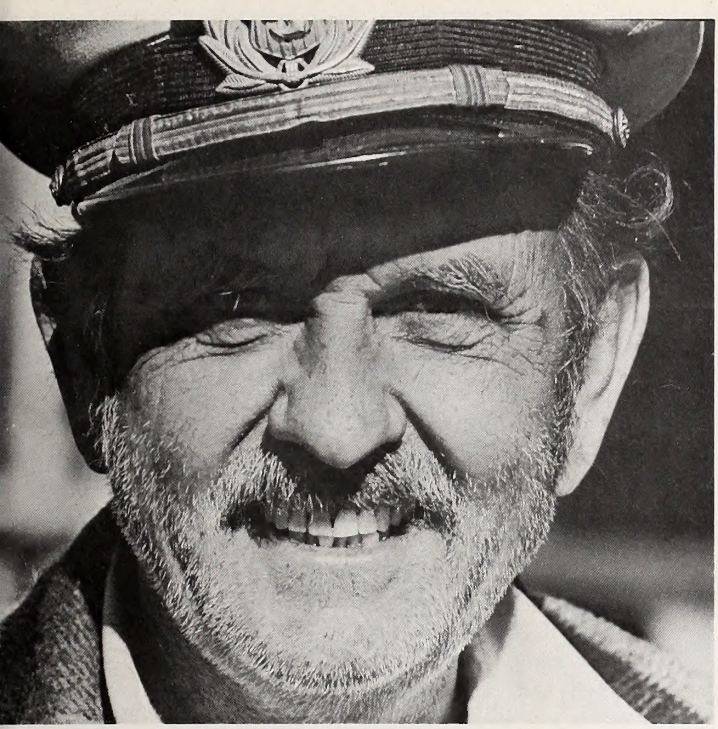
"That engine inspired me, and I started building another boat—longer, and better yet, a lot more beam for stability. By 1930 I had two or three of those surf boats with outboard motors, and business was great.

"By 1932 I started running a shuttle and transferring passengers out on the offshore reefs. We'd get a boat load out there fishing and in another hour or so we'd collect the late arrivals and run them out there, too. We'd bring in those who wanted to come then. An angler could fish several hours or so and come ashore with his string of bottom fish," Carl said.

"We had some commercial fishermen from Seabreeze as guides aboard those fishing boats because they had spent years learning where the offshore ledges and fishing holes were. There were Harper McQuillen, Benny Ross, Noah Futch, Oseola Freeman, and several others, and those men could put you on the fish. They'd been rowing out to those rocks a long time.

"That's the way it all got started with the open boats and the outboard motors.

"When the stock market crashed in 1929 we cut the price from $1.50 to $1.25, and that was the cost until we



Still going strong, Capt. Carl Winner, sports a couple of day's beard. Will the fishing he's known ever return?

stopped fishing off there for the duration when World War II broke out," Carl said.

"You could fish from early in the morning until dark, or you could come ashore. If you didn't have all the fish you wanted, you could get a rain check, and next day you could go back out again free," he explained.

There was no shortage of clients. "We had plenty of tourists in those years starting in 1927. Of course the beach was crowded, and you could hardly find a place out on the strand to stick a beach umbrella in the sand. The train from Wilmington stopped running in 1922, and after that the tourists drove down to the beach in their cars," he said.

Sooner or later Carl had to expect competition, and he ultimately got it in the form of one Jake Faircloth, who put in an appearance at the end of the boardwalk in 1935. Jake had a 1934 vintage car that he traded to Carl for one of his boats and opened for business in 1936.

Carl says it was all mostly a good-humored joke. There was no animosity. "We'd drink beer together at night and next morning we'd stand out there on the beach and try to take each other's customers. It was all in a jolly way, and I guess everybody in the country had a sense of humor during the 1930s," Carl smiled.

"Jake and I never had any bad times against each other. There were plenty of fist fights during the winter offseason when we'd go to some beer joint and get back to back and have fist fights with the strangers, but we never fought each other," he explained.

"I remember one time Jake caught more fish than I did. Some people got to betting on shore. One fellow, Herman Hill, bet Cliff Smith $10 that my boat would catch more trout that night than Jake's boat.

"All bets were covered, and we left in the late afternoon to run down to the trout grounds off Fort Fisher. Jake got his boat out beyond the reef, and, as usual, couldn't get his motor started. He had gotten a new boat built by a house carpenter, and it had a low bow without any rake. It couldn't ride the seas so his motor would drown out more often when a sea hit him. He sat out there back of the sand bar taking his motor to pieces to dry it so it would start.

"While he was working in the stern on that motor his boat was drifting, so he threw an anchor overboard. An anchor doesn't hold so well unless it hooks into mud or in the rocks. His anchor finally grabbed when the boat drifted down the beach over some blue mud we had at that time—he was only about 200 yards from where he'd started. To pacify the anglers on board while he took down the motor, he told them to start fishing.

"Meanwhile we had run the boat down the coast to the trout hole and fished all night. The bet was on the number of fish and not the pounds or size. We had a lot of nice, big gray trout. We returned and thought we'd won the money. We ran the boat up on the shore, and Jake was still sitting out there with a drowned motor.

"They were fixing to pay off the bets, and Jake came pushing his boat ashore with an oar. We went over and looked inside his boat, and he had about 400 trout —all of them about eight or nine inches long that his people had caught in that mud. He had four times the trout we had, and we lost the bet," Carl grinned.

The surf boats and later the cruisers fished regular spots out there in those days. There was Flag Pond, a rock four miles off Wilmington Beach; Little House, so-named because an old fashioned outhouse was located on a high sand dune and served as one of the two ranges on one of the offshore reefs; 111 Rock, a rock where 111 bunches of fish were caught by the commercial fishermen once on a good day; Cylinder Head, an offshore reef named for a place where Jake Faircloth tore his motor down one time to dry it out and accidentally dropped his cylinder head overboard; Gibralta, the farthest rock offshore the boats fished—so far off and three or four times out of sight of land that an anxious crew member on an early trip out there was heard to remark, "If we got much further, we'll come up on Gibralta."

In commenting on the availability of fish in those early years, Carl said there were all the fish you wanted. "I don't know how it was out in the Gulf Stream in those days because it wasn't necessary to go that far. There was an abundance of reef fish inshore. In those days we went out to let a man catch a five or six foot string of fish and be back on the hill in a few hours," Carl said.

"There were lots of schools of bluefish and Spanish mackerel inshore then, but in the 1920s nobody knew you were supposed to catch them by pulling a bait through the water trolling. By the mid-1930s we were taking out a few afternoon trolling parties using handlines, and it got to be pretty good. But we didn't let it interfere with out regular reef-fishing trips because they produced so much better," Carl said.

"Back in the days ahead of World War I we used to catch shad in the Cape Fear River in February and March and pull haul seines full of popeye mullets in the surf in September and October. We dug big

• **continued on page 26**

by Rod Amundson

To most fishermen, a fish attractor is some kind of bait or lure, infallible in its capacity for enticing fish to bite—according to the manufacturers. The attractors we're talking about here are different—maybe even better.

THE American Indian, and his cousins throughout the world, learned a long time ago that the best fishing is usually found in places where small fish can find a place to hide from their enemies, and where their enemies lurk to prey on favored food items.

The Indians grabbled for fish among the submerged roots or branches of trees, undercut by stream currents, or using primitive tackle, caught them from these natural fish attractors.

Wildlife Commission biologists applied this general principle to current conditions. In many lakes and reservoirs, Wildlife Commission biologists are planting man-made fish attractors. These consist of groups of cast-off vehicle tires tied together and sunk in carefully selected localities. The tires must be perforated so they will sink and be entirely filled with water so there are no air bubbles or pockets.

The principle behind this is simple and logical. Fish, especially small ones, like to gather in places of shelter. These in turn attract larger fish that come to prey on them, and the larger fish are what the anglers are looking for.

The same technique is used in the ocean where tires by the barge load are dumped into the water and the sites marked (see page 6, June issue.)

This activity has a very excellent side benefit. It provides a use for old tires that would otherwise clutter up the countryside.

Thus far the Commission has installed well over 200 of these. Taking a cue from this idea, enterprising fishermen use the same technique, but they do not mark them. They locate the bed of a submerged creek, dump the tires overboard, and then establish triangulation points so that the attractor can be located again.

Within a surprisingly short time fish begin to congregate in these spots, and in a matter of days a new "ol' fishin' hole" has been established.

Artificial fish attractors have a distinct advantage over sunken trees or brush piles. The many branches and twigs either ensnare hooks and lures, or larger fish wind the line around a limb and get away. Tires cause little of this trouble.

My first experience with a fish attractor was a number of years ago. John Garner owned a frame hotel called "The Anchorage" at Shallotte Point and a seagoing charter boat. Harry Chadwick, also of Shallotte Point, operated a small fishing boat that plied the Shallotte River.

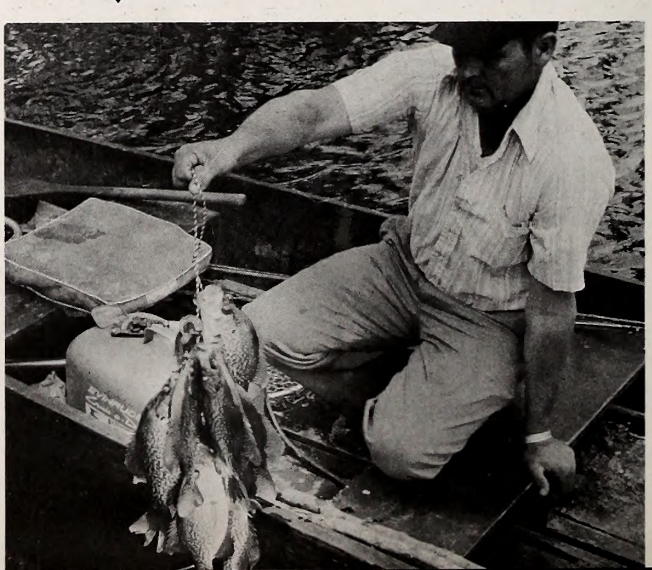
John and Harry gathered some old car bodies and other cast-off scrap iron, loaded them aboard a small barge and dumped them in a fairly deep hole in the upper part of the River. Only they knew the exact location. It was a haven for sheepshead and an angler's heaven.

One morning on a rising tide they took me up to the spot. As soon as Harry's boat, the "Lucky," was anchored we baited fiddler crabs on small hooks and light tackle. Within seconds John and Harry each had on a nice four- or five-pound sheepshead. I got a bite, jerked, and came up with a bare hook.

This went on for about ten minutes. They were catching fish, laughing at my futile efforts, and calling me an armchair sportsman, among other things.

Finally, John said, "Don't wait until you feel the fish bite. By that time he has stolen the bait and you've got nothing. Watch your line. When it moves the slightest bit, set the hook."

I watched the line, a slight movement, and I reared back on the rod. Bingo! I had a six pounder on. We fished until the tide started going out and the fish left. You can do the same thing with crappies, bluegills and such around inland man-made fishing holes. ⬍⬍



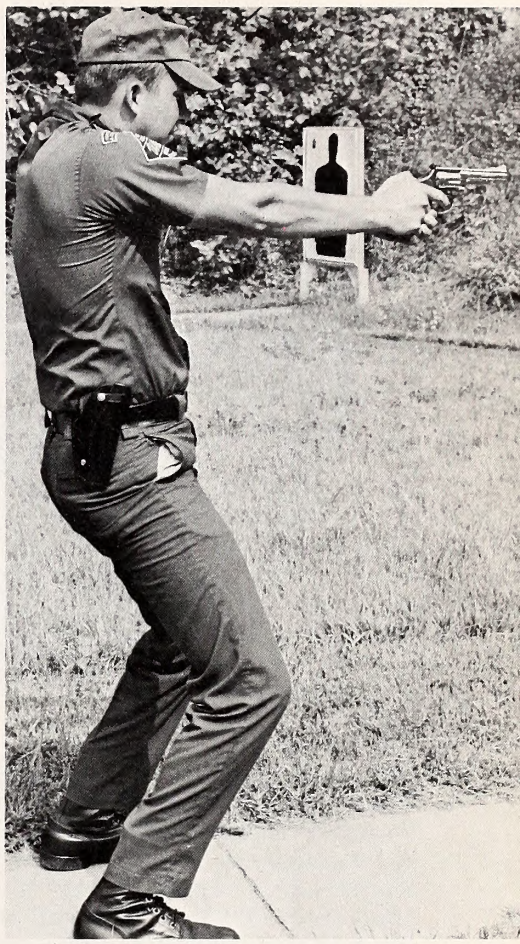


PHOTO BY FRANKIE FURR

The Wildlife Protector—A Man For All Seasons

by Nancy L. Blount
Greensboro

There was a boiling sensation in his blood, and it churned through the fire in dedicated eyes. That he had slept very little of late couldn't concern him tonight, for now he knew only determination, and waited grimly in the cool darkness for another opportunity to prevent an illegal death.

The expectant nocturnal environment had captured an essence unique unto itself . . . stars had ceased to sparkle, and had begun to glare suspiciously at the earth, coursing the landscape for any discrepancy. Here was peace and reverence with a scent of evil, freedom with a taste of invasion, awesome beauty in a shroud of treachery. Soon a spotlight beam would split the night like a cold, dull knife, and a deer in its path would stare helplessly into the barrel of a violator's high-powered rifle.

Into the interrupted, natural sleep of the easy-going countryside, then, would run a fox—the wildlife fox, with a set jaw for preservation of those creatures who, alone, are unable to deal with the frequent injustices of mankind. As surely as he rushes to the scene, their justice will be maintained.

He has a phenomenal duty to perform, for he must satisfy the laws of men and of nature as well. He must seek to somehow compromise and to understand many different inherent points of view. The abiding hunter tolerates him, the unlawful hunter threatens him, the environmentalist often refuses to condone his professional existence because hunters and fishermen help to pay his salary; others shy away from him because he carries a gun, and animals he protects run from him simply because he's a man.

Caught up in the enormous gap between euphoria and reality, he nevertheless stands tall to the defense of all living things. His spirit, borne of the purest levels of compassion and fortitude, enveloped by courage, enhanced with perception, and personified by a badge, reveals unbending conviction. He is a patient teacher of both young and old, an indefatigable law enforcement officer, and a congenial, coffee-drinking seeker of the fulfillment of his beliefs. For all he must endure, he is still one of very few who will risk his own life in order to maintain the balance of nature in a world of human intervention. A man of graceful discretion and common sense, a man of character, a man of principle—the North Carolina Wildlife Protector.

Everybody's (Almost) Friend

The Raccoon

by Rod Amundson

A coon may not be able to whip his weight in wildcats, but pound for pound he can lick any dog unfortunate enough to become embroiled in a hand-to-hand combat. For sheer grit and courage, the coon has no peer in the animal world. Where other game animals depend on speed and craft for defense, the coon depends on his intelligence and his ability as a fighter.

The name "raccoon," or more commonly "coon", has been derived from an attempt by early settlers to spell the word "Arakun" used by the Algonquin Indians to name the animal. Altogether, there are ten subspecies of coons in America. The species native to North Carolina is named, in scientific terminology, *Procyon lotor lotor*. The generic name "Procyon" is derived in a somewhat far-fetched manner from the Greek words "pro" meaning "before" and "cyon" meaning "a dog," the latter being the name of a group of stars which rise above the western horizon just before the dog-star Sirius. The specific name "lotor" is a Greek word meaning "a washer"—descriptive of the coon's habit of washing its food.

Anyone familiar with this important game animal and furbearer has little need of a detailed description. In general, adults weigh up to 15 pounds, with 24-25 pound specimens unusual and 50-pound specimens extremely rare. The general color is a grizzly gray and tan, with a distinct black mask over the eyes which gives the animal a studious expression.

The tail is long and bushy, with black rings which give rise to the name "ring tail." Albinism is quite frequent, with a number of pure white specimens reported. A black phase, called melanistic mutation, occurs quite frequently. The subspecies native to Nebraska has produced a number of specimens which are a brilliant creamy yellow, almost identically the color of a yellow tomcat. The fur of such individuals is beautiful beyond description, and much softer than the ordinary.

The feet of the coon have five well-developed toes with fixed claws. The soles are bare (and surprisingly soft), and the hind feet plantigrade (walking on the heel, as in the case of bears). The front feet, or hands, are extremely dextrous. Owners of pet coons have observed their ability to unlatch doors, remove corks from bottles, and get into an endless detail of mischief.

History

Coons caught the imagination of early settlers and explorers. On no less an authority than Captain John Smith, the coon was described as ". . . much like a Badger, but living on trees like a Squirrel." The skins were early recognized as being valuable for making garments. Coonskin caps soon became the badge of the woodsman. Indians supplied a great number of coonskins to early traders and the furs became popular in collegiate circles in this country during the Twenties, and no well-dressed college man would think of attending a football game or a winter social function without the inevitable coonskin coat.

The pioneers, and many people today, considered the coon an excellent table dish. This fact, added to the value of the pelts, resulted in a terrific toll of coons over a long period of years until protection measures became necessary.

A World War II excise tax on all furs reduced the demand for coon furs because the pelts are used mostly for trim on garments, and the tax applied to the full price of a garment even though it had only a small amount of fur trim.

With the excise tax repealed, however, coon pelts increased in price again. Coon skins fluctuate in value depending upon the supply and demand.

Perhaps the greatest value of the coon is its worth as a sporting animal.

Despite the inroads made by trappers and hunters, coon populations seem to be holding up very well, and it is believed that the animal is still extending its range. It is one of a very few wild species which have benefited by the encroachment of agriculture. It is very fond of green corn and other grains, as well as orchard fruits and berries.

Anyone who has had a coon as a household pet knows that it is a very intelligent and unusual animal. It is endowed with a vivid curiosity and an infinite capacity for mischief. If free to roam the house, it will wreak havoc with bric-a-brac and put the pantry in a state of pandemonium. It will make life miserable for any housecats that happen to be around, and is apt to give old Rover a severe case of hysteria. Ordinarily, coons will get along very well with other household pets; but in case of squabbles, which are apt to arise with considerable frequency, the coon seldom comes out second best.

In the wild, the coon is almost altogether a night prowler, preferring to spend days asleep in a hollow log or tree, or in the sun in warm weather. His nocturnal search for food may take him from cultivated fields to woodlands to the course of streams, the edges of lakes and ponds, or through swamps and marshes. Favored items of food such as frogs and crayfish are found near water, while other dietary items may be taken from the nearest lake or stream.

The coon is an excellent climber of trees, but has limited ability as a runner.

Food Habits

Like his larger relatives, the bears, the coon is an omnivorous eater. He eats a variety of nuts, fruits and berries, catches small fish stranded in flood pools, and happily wades into streams to turn over stones for crayfish lurking under them. He will spend hours in quest of frogs, either in their watery habitat or out in the tall marsh grasses. He is fond of fresh water clams, and even oysters. The taste for oysters is sometimes fatal. The coon tries to get the meat from oysters while the shell is open, but instances have been recorded where the inquisitive front paws have been trapped by the closing shell, and the coon drowned with the incoming tide.

Its appetite for green corn has gotten the coon in trouble with farmers, and at the same time exploded the theory that coons bathe all their food in water before eating it. Midnight raids on the poultry house have brought many a coon to an untimely demise at the receiving end of a load of shot. There have been instances of coons raiding beehives, but the activity occurred during cold weather when the bees were incapable of defending their store of honey.

Coons are very fond of turtle eggs. The writer spent a number of interesting hours on a moonlit night watching painted turtles come ashore to lay their eggs only to have them dug up and devoured by coons which prowled along the sandy beach.

Grubs, beetles, grasshoppers, and other insects form an important part of the coon's diet. Snakes and lizards are other items. Pet coons eat almost anything edible, cooked or raw, with a special liking for sweets and pastry. Grapes are a favored item, and orchard fruits such as apples, peaches, plums, and cherries are included in the menu of both tame and wild coons.

Coons like to wash their food whenever water for such activity is available. They may take a frog or a crayfish dripping from the water and then wash it thoroughly before eating it. Where no water is available, coons will eat unwashed food.

Breeding

There is some argument as to whether coons are polygamous, but there is much evidence to indicate that males may mate with several females. The mating season begins in mid-winter, and the young are gestated for 63 days. Litters vary from three to six young, with four the usual number. Coons have a very definite family life, and many observers believe that males help with the family chores. The family group will stay together until a new crop of youngsters comes along. Parent animals take their young on foraging expeditions to teach them how to fish for crayfish, clams, and frogs. It is very doubtful that adults bring food to their young, but instead teach them to search for food at weaning time.

Houses may be made in hollow trees, hollow logs, crevices and caves, or the abandoned dens of other animals. Artificial dens of various types are accepted and are an important means of coon management.

Enemies

Other than men and dogs, coons have few natural enemies, since there are few animals or birds of sufficient strength to present a serious menace. Distemper seems to be a serious problem in high coon populations. There are a few internal and external parasites, but these seldom occur in sufficient number to inflict any serious damage. The coon is subject to certain seasonal periods which may cause hardship. During the winter and early spring months food is scarce, and the coon depends on stored fat for sustenance. During cold periods in winter months, coons go into a period which is similar to but not actually hibernation. If food has been abundant during the fall, the animal is able to form enough fatty tissue to carry it through periods of adversity.

Management

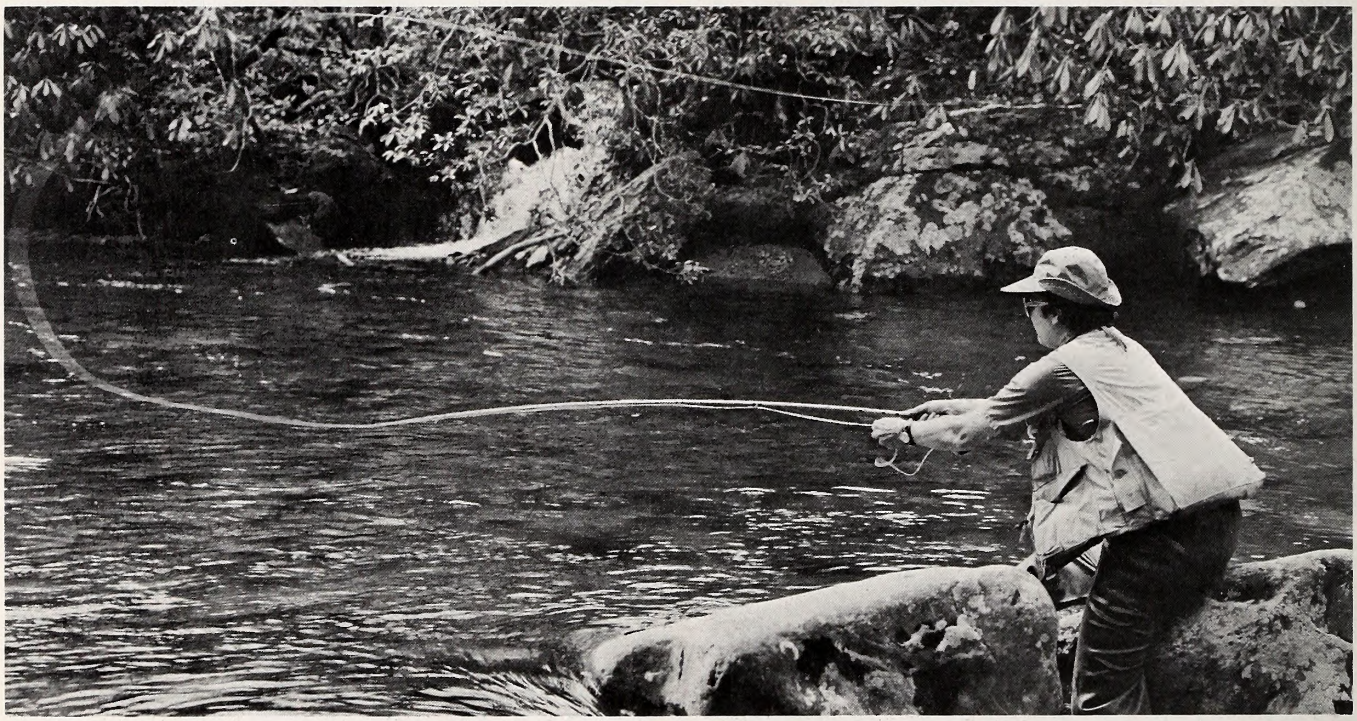
Coons are creatures of the forest, and coon management is closely tied in with forest management. Selective cutting of forest trees may be modified to include leaving den trees for the benefit of the coons. Stands of mast-producing hardwoods provide an excellent source of food, and undergrowth in a properly managed forest will produce wild fruits and berries.

Controlled harvesting of coon populations is the most important single management measure. Coons are relatively prolific, although their fecundity cannot be compared to that of cottontail rabbits and squirrels. But they are tenacious of life, and the diversity of their diet makes it relatively easy for them to bear up well under hunting and trapping pressure.

Stream Preservation Through Interagency Cooperation

by Frank B. Barick
Chief Interagency Wildlife Coordination

Highway construction, along with many other land use projects, often collide head-long with natural streams and wildlife habitat in general. When such projects are necessary, perhaps there is a way to minimize their effects on the environment.



ALL sportsmen, but particularly trout fishermen, will be delighted to learn that a new era has dawned in the preservation of stream fishing.

This was brought to my attention a few months ago through a telephone call from Barney O'Quinn who heads up the Environmental Unit of the Highway Division of our State Department of Transportation. Barney was calling to obtain input from our office and the U. S. Fish and Wildlife Service on "how to construct a trout stream."

Highway Design had found that the most feasible route for straightening and four-laning two stretches of mountain highway would require moving the roadside streams. In each case, it was a highly productive stretch of trout water—Middle Fork Creek in Watauga County between Blowing Rock and Boone along US 321, and Bald Creek in Yancey County between Burnsville and the town of Bald Creek along US 19E.

"What can we do," Barney asked, "that will allow improvement of these two important stretches of highway without destroying the beauty and productivity of the stream that flows through it.

When increasing traffic and safety requirements make it necessary to upgrade a road there are two alternatives: either find a new route or improve the old route. We in wildlife have long since concluded that upgrading the old route is less damaging to the environment. The few remaining vestiges of "wilderness" in our state are certainly not in need of further fragmentation with new roads.

Needless to say, we were delighted to learn of Highway's concern and we immediately contacted Don Baker, Chief of our Division of Inland Fisheries. With Don, we worked up a number of ideas that would provide for preserving the natural beauty and fish-producing capacity of the streams that had to be moved.

Along those sections of the road where channel relocation is to occur, the new stream bed would be

dug and completed prior to the diversion of water into the new channel.

The new channel would follow the slope of the land, with falls, riffles, and pools that would provide aeration, food production and hiding and resting places for trout. Insofar as possible the channel would meander. We did not want a straight rock-lined flume.

Where a rip-rap rock bank was necessary to prevent undercutting the road there would be a scattering of large boulders to create eddies and provide shelters. There would be current deflectors to move the water from side to side in the channel for a further increase in aeration and to create quiet water for resting.

The channel cross section would be V-shaped, rather than flat-bottomed, so that in time of drought there would still be enough water depth to provide livable habitat. The bottom would be covered with gravel, particularly in riffle areas, to provide habitat for fish food organisms.

Lastly, the earth banks would be stabilized with grasses and other vegetation and fast-growing native trees would be planted—more closely on the south side—to provide shade from the summer sun. Only after all this was completed would the plug at each end be opened and the stream deflected into the new channel.

Work could then begin on the highway—after placement of barriers and construction of silt traps to prevent silting the stream.

These were the specifications we prepared, admittedly with our fingers crossed, for never before, to our knowledge, had such requests been registered. Needless to say, we approached the conference with the Highway folks with some foreboding. What if our proposals were branded impractical pipe dreams, impossible to fulfill? What if "practical considerations" were to preempt anything short of a concrete flume without cover, or resting or feeding areas? What if . . .?

But we found our fears to be groundless. Instead of being confronted with a corps of unbending civil engineers we found ourselves in the midst of people who, like us, were sincerely concerned about the preservation of our environment and the richness of our natural resources. Instead of objecting to falls and pools and riffles and cover and stabilized banks and shade, the reaction was "if that's what's needed, that's the way we are going to design it."

There was not a single objection to any of our proposals. Frankly, it was almost too good to be true. We felt that history was being made and we felt good to have a part in making it.

It was agreed that our recommendations would be taken into consideration in preparing the plans and specifications for the highway project. After the plans are completed, representatives from both U. S. Fish and Wildlife Service and our office will be invited to accompany representatives from the Division of Highways to the site for an on-site inspection and final consultation prior to the awarding of a contract.

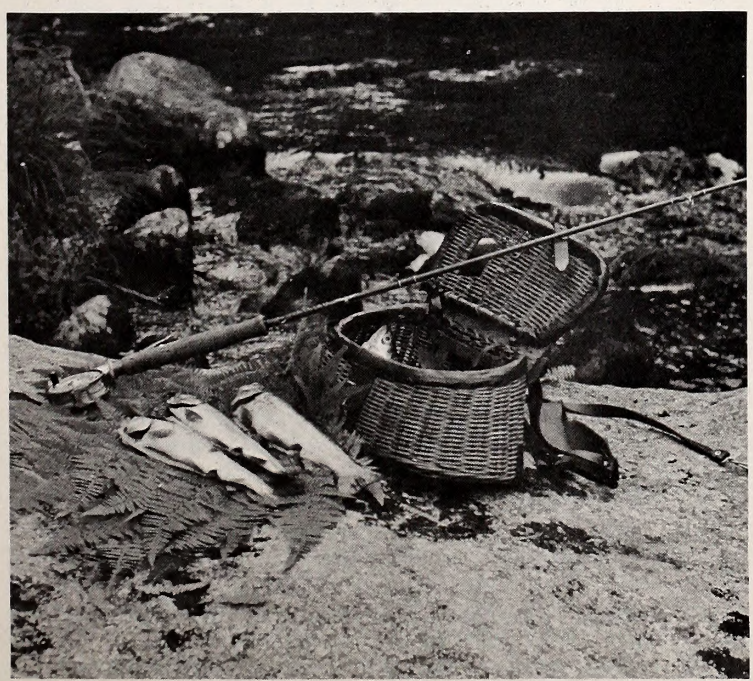
Our hope was re-enforced by another call, a couple of weeks later, about Scott Creek along US 19-23 in Jackson County. Plans were much farther developed on this road project but could we provide suggestions for preservation of the bordering stream?

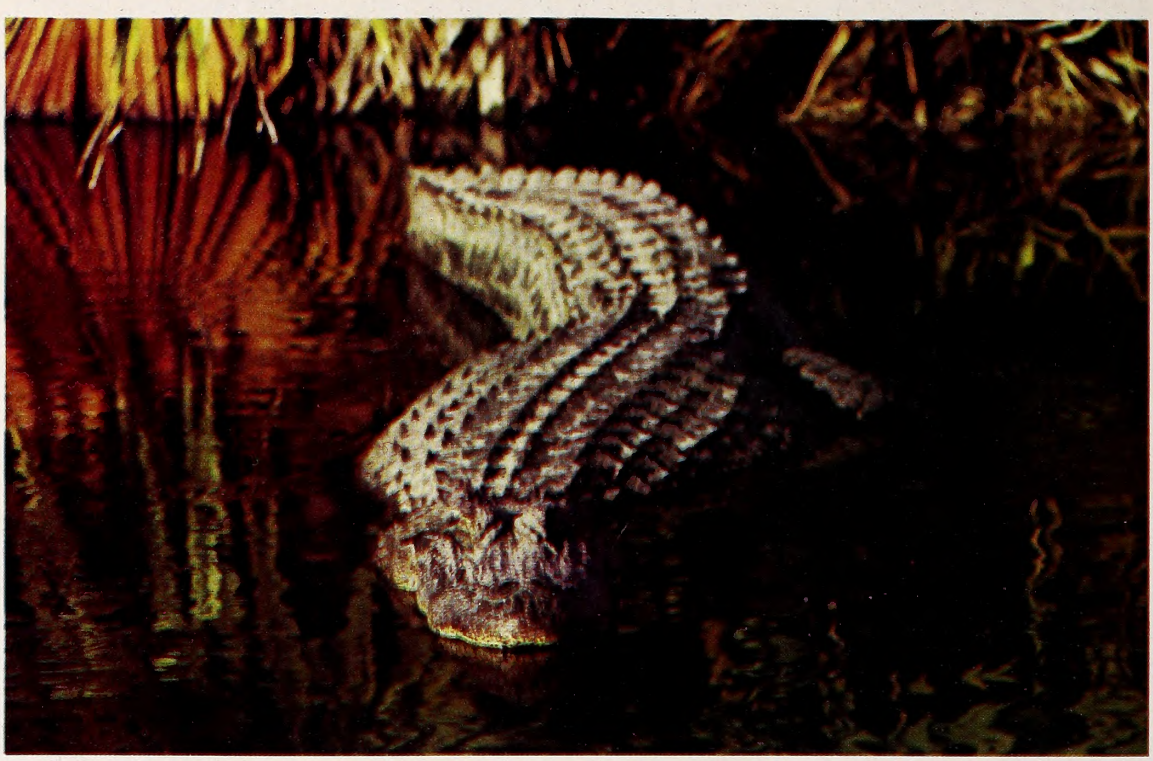
Within a few days we had the detailed design specifications from our local field biologists and they were passed along to Highway. Shortly afterwards, a representative from Highway Design brought over the drawings and specifications for the stretch of road, with our suggestions included.

It is hard to say how successful the Division of Highways will be in their first attempts to construct trout waters, but like Virginia Slims, we've come a long way, Baby! We are delighted to have a new ally in our campaign to preserve the wildlife resources of North Carolina.

Nature is difficult to duplicate. The construction of a trout stream may be all but impossible. But with thoughtful consideration of streams and other natural areas, plans can be developed, which will preserve these fish and wildlife producing areas. Once they're gone, replacement is not likely.

PHOTO BY JOEL ARRINGTON





ALLIGATORS: Trouble After 100 Million Years

by Steve Price
Houston, Texas

I don't think anyone ever forgets the first time they see an alligator in the wild. There is something so primitive, so threatening in their appearance, that it sends chills down the backs of even the most experienced naturalists.

I remember my first 'gator. Winston-Salem friend Roland Barnhardt and I were actually looking for the reptiles so we could photograph them, but when a seemingly harmless floating log suddenly veered toward our tiny boat and then disappeared under us with a single splash of its tail, I forgot all about cameras. We just knew the critter, which was about a six footer, was going to capsize the boat.

It didn't, of course, for most alligators are generally afraid of humans, and we survived to take our color movies. We counted ourselves fortunate in seeing any alligators, for five years later, in 1969, this animal was put on the Endangered Species List.

Today, the alligator has made a strong recovery, although it is by no means out of danger. Where there were once only dozens of this fascinating creature, now there are thousands. Commercial alligator farming is proving to be somewhat successful, and Louisiana even held a controlled hunt for them, in which nearly 2,000 alligators were harvested.

It would have been a tragedy if the alligator had been hunted to extinction. There are only four basic groups of reptiles alive in the world today that have survived from the age of dinosaurs over 100 million years ago. These include lizards, snakes, turtles, and —you guessed it—alligators, which have changed little over the centuries. Fossil remains show the ancient creatures grew to lengths of 60 feet, but basically the long snout, strong tapering tail and short, stubby legs are still the same.

Today's alligators seldom grow more than about 12 feet, which may take a dozen years to accomplish. Hatching from eggs each summer, the babies are about eight inches long. In a year they are nearly two feet long and gaining weight rapidly. A 10 footer will weigh around 400 pounds. The largest recorded in modern times was a 19 footer which weighed over half a ton.

Despite their size and bulk, alligators can move surprisingly fast, both on land and in the water. Once, I was focusing my camera on a small marsh bird while an alligator sneaked up behind it. I snapped the shutter as the 'gator snapped its jaws, but I never really saw it happen. My picture is a barely distinguishable blur.

For perhaps a hundred feet, an alligator can run as fast as a man on land, but in the water, can swim faster than two men can paddle a canoe. It swims with its strong tail, moving it from side to side and using its short legs for balance. That same tail can snap a man's leg if it happens to get in the way.

Alligators have powerful jaws, and do not really chew their food, but tear and crush it. The jaws can also be held closed with one hand because the muscle that opens them is extremely weak.

This reptile is well-fitted for life in the water. Its

PHOTOS BY STEVE PRICE

Coming back? Some authorities say yes, the alligator is rebuilding its depleted numbers; but it will require continued protection and vigilance.

toes are webbed. The eyes are covered with a thin, clear membrane that provides for better underwater vision. A flap of skin at the back of the mouth can close off the throat, and the two nostrils connect to the throat behind the mouth so the alligator can breathe when only the tip of its nose is out of the water.

This is how alligators are so easily able to surprise their victims. Lying underwater with only its eyes and nostrils above, it simply waits until some unfortunate bird, turtle, fish, snake or muskrat swims too near. With a single snap of the huge jaws, dinner is served.

Alligators are one of the few reptiles with a voice. The very young can utter sharp barks, while the older ones roar and bellow like tugboat foghorns. These roars and grunts are most often heard during the mating season. A female alligator in the wild lays about four dozen eggs in early summer, and the young hatch in approximately nine weeks. The eggs are covered with part of the nest, which slowly decomposes in the hot sun. This provides the constant temperature necessary to hatch the eggs.

From the time they emerge from their white, leathery shells until they are several years old, alligators live dangerous lives. Large fish, birds, even other alligators consider them tasty morsels. Once grown, however, the alligator has no natural enemy except man.

As a grown-up the alligator performs a great service to many of these same creatures that would have eaten it as a baby. They are den builders, and usually construct unique caves, tunnels and ponds to hold water. If the water level drops, as it does during the frequent Southern summer droughts, the alligator uses its powerful tail, hind feet and even its mouth to dig deeper.

As the marshes grow drier, the water that seeps into these "gator holes" provides continued life for every aquatic creature living in the area. This includes all the little fishes, larvae, crayfish, salamanders, snakes and tadpoles—which also serve as food for the birds, raccoons, bobcats and other wildlife that usually have young during the dry season of the year.

It doesn't end there. When alligators are plowing up the mud for their dens, they usually put it all in one spot, called a tussock. This mixture of mud, roots, and leaves helps form fresh fertilizer for young plants. Seeds fall into this artificial island, and in turn grow into larger plants and even trees, which eventually become nesting places for birds.

Early explorers found alligators extremely abundant throughout the southern region of the United States. Two hundred years ago the famed traveler and chronicler William Bartram described this scene in Florida: "The alligators were in such incredible numbers, and so close together from shore to shore, that it would have been easy to have walked across on their heads, had the animals been harmless."

Even 40 years ago, these reptiles were numerous, from North Carolina to Texas. Ross Allen, one of America's foremost naturalists, says there must have been over half a million in the central part of Florida alone. In the early 1930's Allen captured as many as 1,000 a month before he realized the animal's danger of extinction if such practices weren't stopped.

At that time, and until the 1960's hunters were receiving about $6.50 a foot for the hide of an alligator. A dealer sold that hide to a tanner for $8 a foot, and the tanner might charge $1,000 for a suitcase made from it.

Because alligators were so easy to capture, poaching continued to be a major problem long after all legal hunting seasons were closed. A successful poacher could kill as many as 20 'gators in a single night.

It's estimated that nine out of every 10 alligators in Florida were killed by poachers before law enforcement officers finally brought the situation under control. Today, they are thriving again, in the backwaters of Carolina swamps, Florida marshes and Louisiana river bottoms. The animal is still on the Endangered Species List, but may be removed if "alligator farming" research projects now under way prove successful.

Actual attempts to breed alligators in captivity are not new. Pioneer efforts were tried as long ago as 1887. Ross Allen began trying it when he stopped hunting the reptiles commercially in 1935, but in 38 years he spent $71,000 on the project and produced only 270 baby alligators.

The University of Florida has joined Allen in his research, and other 'gator farms are now located in Georgia, Louisiana and Texas. It's a tough problem. Alligators seldom lay eggs until they have been in captivity about 10 years, which is an extremely long time in the animal world; and once the eggs are laid, temperature around them has to be kept as constant as possible. Even moving the eggs from nest to incubator can cause them not to hatch.

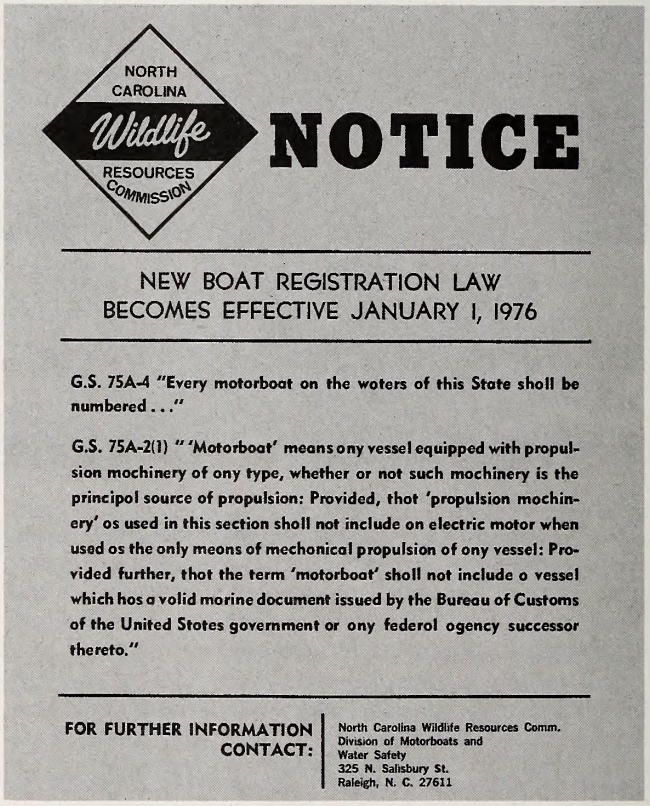
Alligator farming has a future, although it will take years to become widespread and economically feasible. If the farms can fill the demand for hides, it will effectively eliminate poaching. Other alligators could be used to restock wild areas depleted of the reptiles.

It's a unique way to protect a creature whose ancestors have been around for over a hundred million years, but raising them in captivity just may be the key to the animal's future in the wild. ▲▼

Stem to Stern

BY ED JENKINS

The requirements of the new boat law are summarized in this poster which you will be seeing displayed soon. January 1, 1976, is the effective date of the law.



● The North Carolina General Assembly has enacted a new boat law which affects thousands of small boat operators in the state.

The new law, effective January 1, 1976, requires the registration of all motorboats on public waters of North Carolina. Boats using electric motors as the only means of mechanical propulsion and documented vessels are exempted from the registration requirements.

The requirement that states register all motorboats was spelled out in the Federal Boat Safety Act of 1971. The registration requirement in the act was meant to encourage greater uniformity of boating laws and regulations among states and the federal government.

Boat registration provides a way to identify boats and locate owners or operators of these boats. Without boat registration it would be difficult or perhaps impossible to identify boats responsible for property damages, boat operators who may have injured others in accidents or operated their boats in a manner that could have caused serious injury, or return boats which were stolen or found adrift, to their rightful owners.

Boat registration fees collected by the Wildlife Resources Commission are returned to the boatman in the form of services designed to make this sport safer and more enjoyable. Let's take a quick look at some of these services.

Access Areas—The Wildlife Commission presently has 123 active boat launching areas throughout the state providing access to fresh and salt water. There is no charge for using these areas. Boat registration fees not only pay for the construction and maintenance of existing areas but also provide the funds necessary to purchase land and develop new sites.

Waterway Marking—In the past two years over 200 buoys have been placed on the waters of our state to warn boaters of hazards that may go unnoticed, and to mark auxiliary channels of navigation.

Stream Clearance—The Commission's stream clearance program has opened miles of streams and waterways that have been closed by fallen trees and other obstructions.

Boating Safety Education—Boating safety programs are financed in part by the boat registration fees. Production of television spots and films, booklets and materials on safe boat operation, displays used at fairs and boat shows, and a boating safety course used in school systems throughout the state all play an important part in promoting safer boat operation.

Boat Regulations—Sometimes regulations or boating laws are needed to eliminate dangerous situations or practices. While supporting regulations designed to make boating safer, the Wildlife Commission insists that only reasonable and sensible regulations are adopted.

Boat Patrols—Enforcement officers on the water insure that boats are properly equipped with required safety equipment and that safe boat operation is observed. The officers on the water also assist boats in distress, search for missing boats and persons, and protect the boating public from a few who jeopardize the lives and property of others.

The Commission's boating programs benefit everyone using the waters of our state; however, the funds that support these programs have come from those individuals using boats with engines in excess of ten horsepower which were the only boats required to be registered. While the costs of providing services to the boating public have skyrocketed, boat registration fees have not increased since the Wildlife Commission began registering boats 15 years ago.

The additional revenue received from the registration of motorboats of ten horsepower or less will enable the Commission to continue, and expand, programs and services provided for the entire boating public with no increase in the registration fee. And what can be more fair than that? ◆

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

New Licenses

That time has rolled around again: July 31 is the expiration date of the N. C. Combination Hunting and Fishing License, and the Hunting License. State Fishing Licenses are good through December 31. The recent legislature granted license fee increases, so check the new cost schedule.

More Courtesy Motorboat Examinations

Flotilla 93 (Winston-Salem) of the U. S. Coast Guard Auxiliary winds up its CME's as follows:

Date	Time	Location
July 6	10:00 am - 5:00 pm	Midway Marina, Lake Norman
July 6	10:00 am - 5:00 pm	Commodore Marina, Lake Norman
July 6	10:00 am - 5:00 pm	Carolina Campin & Marina, Belews Creek Lake
August 3	10:00 am - 5:00 pm	Carolina Campin & Marina, Belews Creek Lake

Celebrate The Fourth Without a Fifth

This may come too late as advice for the 4th of July, but operating boats or motor vehicles are full-faculty propositions; don't drink before or while doing either. Safe boating can be a reality if all of us work at it while we play.

High Water Curtails Shad, Rock Fishing

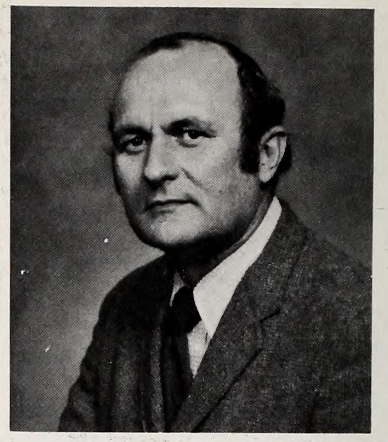
The fisherman didn't fare as well as the fish did this time, when abnormally high water all but washed out the angling for striped bass on the Roanoke River and the shad on most eastern N. C. streams during May and June. However, most agree that the fish of both species did come up and did spawn. Time will tell, however.

Give Wildlife a Brake

Yes, it's spelled correctly, and it is that big peddle that your right foot should be on when you see wildlife either on the side of the road or ready to dart across in front of you. Watch out when you travel this vacation time.

William Faver: Relating People to the Environment

by Robert Marks
High Point Enterprise Associate Editor



William Faver

ALMOST every day since last September, William Faver has tramped over 200 acres of fields and woodland along the back shoreline of the High Point City Lake.

He was marking trails — the Chickadee Trail, the Pipsissewa Trail, the Fiddlehead Trail, the Dogwood Trail. Former director of education at First Presbyterian Church in High Point, Faver opened the Environmental Education, Recreation and Research Center.

During March the Center reached 599 persons through visits at the Center and programs given to groups away from the Center. This figure was boosted by the Open House on March 23 when 211 visitors came to view the displays in the Interpretive Building and walk on the trails. Through April 10, seven groups visited the Center and programs for five other groups were presented.

In the woods, Faver and his crews have installed three footbridges on the Pipsissewa Trail thus completing the "Nature Walk" on the Chickadee and Pipsissewa Trails. The Lakeshore Trail has been cleared and three benches placed along the trail. This gives a 1¾ mile loop out of the Dogwood Trail to the old housesite and back along the Lakeshore Trail. The Pine Thicket Trail which connects the Dogwood Trail and Fiddlehead Trail has been cleared. The Jaycees have agreed to provide a floating bridge across one area of a cove of the lake and this is expected sometime during the summer. The Hillside Trail has been marked and cleared. The Wildflower Garden Club has all but completed the Wildflower Trail and the numbered stations have been located and signs placed. An observation blind has been placed near the briarpatch on the Chickadee Trail.

During March a new bulletin board display featured "The Web of Life" and emphasized the ecological principle that everything is tied to everything else. This exhibit was prepared by Martha Yarborough and Ann Upchurch, two faithful Junior League ladies.

Another exhibit, the "Awareness Board" uses color slides to stimulate thinking about natural features as we "take time to see" what is around us. Visitors are reminded to "become aware" of the interrelationships and interdependencies, the patterns, the similarities and varieties, the changes, and the adaptions taking place in the natural world. The third feature asks "to do something" and some suggestions are given.

A map of the area outlines the trail system and the buildings and features at the Center. This map has been placed above a small desk right by the door of the Interpretive Building so that visitors can become oriented to the Center as they begin a visit to some of the trails. Maps of the trails are available at this desk and an interpretive booklet on the "Nature Walk" over the Chickadee and Pipsissewa Trails.

Two glass-cased bulletin boards have been attached to the outside of the desk. These provide information for visitors when the Interpretive Building is closed and add additional display space.

Once a farm, the center is off

When was the last time you examined carefully the soil of a forest floor? Areas such as the one described here, give us a chance to relate to this all-important, fragile thing we call the environment.

Penny Road near Jamestown. The farmhouse and outbuildings are being used as an office and for exhibits. High Point acquired the property through an exchange of land with Jamestown, whose new golf course is adjacent to the environment center.

The center itself is the result of efforts by the High Point Trails Committee and the Junior League, which gave a grant towards its establishment. One of the leaders in the move for the center, Faver was appointed its first director last September.

"The land is typical of the environment found in this area of North Carolina," Faver explained. "It shows the ecological relationship that exists in the woodlands.

"Why is the briarpatch so important? Because it provides a home for rabbits, and because the presence of the rabbits means an increase in the number of earthworms in the area. The cycle means an enriched soil for plants and animals alike.

"It is to show these relationships clearly that the land is going to be disturbed as little as possible," Faver said. "The trails follow natural features of the land, ridgelines and waterways, for example. Stakes will call attention to and explain special ecological features. But the idea for the center is not just for education alone. People can also come out and spend a day enjoying themselves by just walking in the woods."

There is mixed in Faver himself, making him an ideal choice as the first director of the center, the experience of learning from and enjoying the woods, the fields and the plant and animal life found outdoors. He had a master's degree in agricultural economics from Clemson University before his interest in young people led him to study at the Presbyterian School of Christian Education in Richmond, Virginia.

He was in church work in Orlando and Miami Springs, Florida, and in Corpus Christi, Texas before he came to High Point.

"The church member should have a concern for the environment and ecological relationships," Faver said. "The care of the environment and the land is a form of stewardship. There are questions of how man fits in and his responsibility to the environment."

The Environmental Center is designed in such a way that it can be used as well as simply looked at. It is a "doing" center as well as a "thinking" one.

A resident of High Point since 1969, Faver is president of the Catesby Bird Club and is chairman of the recreation committee on the Community Planning Council. He and his wife, Catherine, make their home at 809 E. Farriss Avenue. Their daughter, Cathy, is a student at Eckerd College in St. Petersburg, Florida. Their son, Rhett, is a senior at Andrews High School.

Mrs. Faver is program coordinator at the Presbyterian Home.

Faver is a native of Eastover, South Carolina, a rural community near Columbia. His father, William H. Faver, now retired, was a wholesale gasoline distributor. Faver's mother is deceased. He has a sister, Anne, who lives in El Paso, Texas.

While in high school, Faver met Catherine McGregor, who lived in Hopkins "up the road from Eastover." They were married when she was a sophomore at Winthrop College and he was at Clemson.

From 1955 to 1957, Faver served in the Army. He commanded an infantry platoon at Inchon in South Korea.

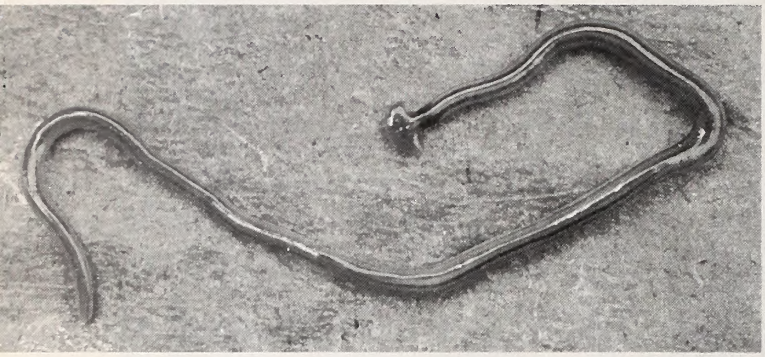
In developing the Environmental Center, Faver is guided by three principles. "We will seek to disturb the land as little as possible. We will seek to make use of and intepret the natural features existing at the site. We will seek to relate people to the natural environment."

The relationship of man to nature has been a major interest in Faver's life. It is reflected in his leadership of the Catesby Bird Club, in bird watching, and his interest in photography—photographing birds, animals, plants and trees in natural harmony.

He wants other people to share the experience. "Our location is ideal," he said. "The Environmental Center is only 10 or 15 minutes from High Point. Both Greensboro and Winston-Salem have similar programs, but with slightly different emphasis in each. I hope we can work together so that people throughout this area will have an even better opportunity to study and enjoy nature." ▲▼

ENVIRONMENTAL EDUCATION,
RECREATION & RESEARCH CENTER
ROUTE 1, BOX 401
HIGH POINT, NORTH CAROLINA 27260
HIGH POINT PARKS AND RECREATION DEPARTMENT

The Giant Terrestrial Flatworm



by Rowland M. Shelley
Curator of Invertebrates
N. C. State Museum

A common inhabitant of yards and gardens in the southern United States is the exotic terrestrial flatworm, *Bipalium kewense*. Native to the Indo-Malay region, the worm has been introduced into temperate and subtropical zones through its association with the soil and roots of imported plants. It was first discovered outside its native region in a London greenhouse in 1878, and it has since been found in Australia, New Zealand, China, Japan, Samoa, the Fiji Islands, Brazil, the West Indies, and Norway, as well as the United States. In this country, the worm is known from Hawaii, California, Oklahoma, Louisiana, Mississippi, Alabama, Florida, Georgia, North and South Carolina, Tennessee, Ohio, Illinois, New Jersey, and Massachusetts. South Carolina localities include Florence, Florence Co., and Georgetown, Georgetown County; in North Carolina, the species has been reported from Wilmington, New Hanover County, Lumberton, Robeson County and Raleigh, Wake County.

Bipalium is readily identified by its dark gray lunate-shaped head and by its long, yellowish, ribbon-like body with five purple-black stripes. A patch of darkish pigment occurs in the "neck" region, and numerous eyespots occur along the margin of the head and in a row along the edge of the body. These eyespots are photoreceptors and do not form images; they are absent from the posterior end of the body.

As a flatworm, *Bipalium* belongs to a large group of animals which includes the parasitic flukes and tapeworms. Most of the free-living flatworms are marine, but some inhabit fresh water, and a few occur on land. The terrestrial forms, sometimes called land planarians, occur mostly in humid tropical and subtropical environments, but a few species are native to the southern Appalachians. Most terrestrial flatworms are only an inch or so in length at maturity, but *Bipalium* is a giant and generally exceeds seven inches, with lengths of over a foot being recorded during extension.

Some people mistakenly consider *Bipalium* an earthworm, the best known terrestrial worm in this country. The two, however, differ in many respects, the most obvious being the shape of the body. Flatworms, as the name implies, have a flattened body, while that of an earthworm is much more rounded or cylindrical. Moreover, the earthworm's body is divided into numerous segments which are clearly visible to the unaided eye. A flatworm is smooth and unsegmented and secretes a thick layer of mucus on which it glides across the surface.

Internally, there are many differences between the two worms, and perhaps the most striking involves the digestive tracts. In earthworms, the tract is continuous with openings at the anterior and posterior ends; in flatworms, however, there is only one opening, on the ventral surface, varying distances from the head. Both food and waste must pass through this same opening.

There are a few similarities between earthworms and flatworms, one being the presence of both sexes in a single individual. Both worms thus reproduce sexually, although a single individual cannot fertilize itself. *Bipalium*, however, can also reproduce asexually by fragmentation of the posterior end. In this process, the animal "pinches off" pieces of its tail about ½-inch long. These are motile immediately and show a strong head-tail orientation. After seven-10 days, a small head develops, and the animal gradually regenerates its internal organs. In this way, a single individual can give rise to a whole colony. Fragmentation is the primary method of reproduction in temperature zones, where the sexual organs usually do not mature due to the cool temperatures. *Bipalium* thus owes its success in colonizing cooler zones to its well developed ability to fragment.

Bipalium is a carnivore and appears to feed only on earthworms. The pharynx of *Bipalium* is inserted into the body of an earthworm and its contents are "pumped out" by muscular action. An adult *Bipalium* can devour half of a five inch earthworm in 30 minutes. Due to the abundance of earthworms in American yards, food is no problem to *Bipalium*, and the animal has indeed become a pest in some earthworm farms. On the other hand, *Bipalium* has no known predators itself, although it does appear to be susceptible to certain soil fungi.

I recently encountered a colony of *Bipalium* in New Hanover County, about 8.5 miles S Wilmington. Several adults and fragments were found in a piece of buried, rotting cloth. The longer individuals were tightly coiled, a position which may help to reduce water loss by evaporation. Less surface area is exposed in a coil than if the animal were lying straight. The mucus secretions also protect against water loss.

The worms were taken to Raleigh and maintained for over a month in a jar with moist paper towels. They were observed moving and always proceeded by first "testing" the environment with their heads. They moved surprisingly quickly and could greatly extend and contract their bodies. The most interesting observation was an apparent adhesiveness to the head. Several times I attempted to lift the worms only to have them remain firmly attached by the head.

Thus, *Bipalium kewense*, an Asian immigrant, has become established in North Carolina. It may be expected in all 100 counties of the state. *Bipalium* doesn't bite, sting, or exude a toxic secretion. If an individual should be discovered in your yard, it can be handled without fear, for the giant terrestrial flatworm is completely harmless to man.

Common Surf Fishing Goofs

FISHING

by Jim Dean

● "I've been right here all day and I haven't caught a fish yet," groaned the fisherman as he stood in the wash of suds on one of North Carolina's Outer Banks beaches.

That seemed strange. Though it was July and hot, fishing had been pretty good.

I looked at his tackle. It seemed okay. He had a nine-foot surf spinning rod with a reel loaded with what appeared to be about 15-pound test monofilament. He had a common, two-hook bottom rig with a three ounce pyramid sinker, and he was using shrimp for bait.

After talking with him a few minutes, and watching him make a couple of casts, I soon realized his problem—or problems. Actually, he was making several basic mistakes.

For one thing, he hadn't been there all day. It just seemed like it. He told me he'd started fishing about mid-morning.

That was one major mistake right there. During hot weather, most of the fish will be caught from dawn until breakfast. True, you sometimes have good fishing all day, but anyone who wants to consistently catch fish from the surf in mid-summer is going to have to climb out of the rack early.

Another thing I noticed was that this fisherman was soaking his bait on a falling tide. Sometimes fishing is very good when the tide is falling, but it's more likely to be good on the last hour or two of the rising tide, or just at dead low tide as it begins to come in.

After I had watched this fellow make a couple of casts, I gained even further insight into his problem. Every time he made a cast, he threw it as far as he could. Fish aren't just "out there" somewhere. Most of the time, they are in a particular place, and the angler who catches them knows this.

If you throw the bait as far as possible, you might land on a shallow sandbar and never catch a fish. A shorter cast would have plunked my friend's bait in the middle of the deeper slough which runs parallel to the bank between the beach and the sandbar. On some parts of the beach, these sloughs are far deeper than on others. For example, a hundred yards down the beach, there was a fine, deep slough, but my friend was fishing a relatively flat and shallow section where fewer fish stayed.

Many times, even a cast into the deeper part of the slough will be too far. Many fish—particularly such bottom fish as sea mullet (whiting), spots, croakers, and flounders—will be closer in right under the inshore breakers. A short lob will put your bait amongst 'em, but if you throw over the breakers, you may not catch a thing. Ever wonder why kids sometimes outfish their parents on the beach? They can't cast far, so their bait lands in the breakers where the fish are. Think about that the next time you surf fish.

Getting back to our fishless friend, I need to tell you about one other mistake he made—a very important one.

Stated quite simply, his bait stunk. He was using shrimp, and shrimp are normally very good bait, but his were so ripe that they had turned red. He had to hold his nose to bait the hook. Few fish like ripe shrimp.

Always use fresh bait, even if you have to check several places to find it. Sometimes the bait sold at pier tackle shops is not fresh. If you find that to be the case, go to a local fish Market. Look for greenish, translucent shrimp which have little or no smell. Avoid shrimp that are turning pink or reddish.

You might also consider trying some other types of baits. For my money, bloodworms are often the best surf bait you can use, but they're hard to find and expensive. Bloodworms are marine worms that cannot be raised in captivity. They must be captured and shipped down to us from New England. The last time I bought any, they were $2 a dozen.

Fresh squid, crab, and cut mullet (or other fish) are all good baits at times. Cut fish (particularly mullet) makes super bluefish bait. Just make sure your bait is fresh.

There are, of course, other basic rules about surf fishing, but I suspect that the ones I've outlined are probably the most commonly violated. My grandfather always jokingly said that fishing was simple. All you've got to do is find the fish and give them what they want, when they want it.

I don't suppose you could achieve that all the time, but the closer you get, the more fish you'll catch.

The Ordeal

by Charles R. Lail

WHEN my son Alan, asked to go fishing with me for the first time, I balked. I could imagine the trouble I would be into, such as unsnarling lines, baiting hooks, removing hooks from small fingers; the list seemed to go on and on.

As I thought about it though, I figured a five year old has to learn sometime, so the three of us—Alan, his mother, Peggy, and yours truly—headed for Plant Marshall generating station on Lake Norman, in the Piedmont section of North Carolina. Here is a spot locally known as the "Hothole" because of warm water discharged from the steam plant into a canal which leads back into the main river.

The fish, including the lowly carp, frequent these waters year-round, and here is just the place to begin fishing for a young, impatient boy. I chose this place because I had fished here often, and have had barrels of fun pulling carp from these waters until my arms hurt from cranking the reel.

Armed with the bait-casting reels, medium action rods, and a generous supply of carp-dough, we began what I just knew was to be some kind of ordeal. Although it had been some time since I had taken Peggy fishing she soon had the fishing spirit, and when we arrived, everyone was anxious to be the first to hook onto ole "Carpus-delecti."

After reviewing baiting procedures with everyone, then helping them cast to the right spot, I was all set for the coming ordeals. Soon Peggy had one on, then another, then another, and I couldn't even wet a line.

Suddenly, Alan's rod-tip dipped into the water.

"Son, keep your rod pointed up. That way you can feel the fish when he strikes," I told him.

"Daddy, I can't!" he cried out. The rod was going deeper into the water and I was afraid he was going to lose the whole outfit.

I grabbed the rod and helped him set the hook. To Alan it must have felt like a whale, but soon, with Alan cranking the reel and me helping to hold the rod, we landed a carp of about five pounds. The youngster was so excited he forgot about fishing, and could only talk about the monster fish he had just pulled onto the bank.

Thus a five-year-old's fishing career began. And, I enjoyed every minute of it. First the above mentioned carp, and then because of the abundance and ease of catching this particular type of fish, he never became discouraged.

With his confidence built up, and his impatience partially under control, we decided to try panfish. Crappies, bluegills, shellcrackers, yellow perch, and his favorite, catfish, soon fell to this young fisherman.

All this had taken place over the past four fishing seasons. Last Spring we decided to try our luck on something bigger. The local stretch of the Catawba River has some pretty fair fishing, so here was our starting point. Late one afternoon we slipped the boat into the water at one of the local access areas and began the most exhilarating experience of my short "teaching" career.

Alan had practiced with a spin-casting outfit for weeks, and using a seven-inch plastic worm on a 6/0 worm hook rigged so it was weedless, a ¼ oz. slip sinker, and eight pound test line, he was, and still is, pretty accurate.

As we found the right looking spot, Alan began casting the plastic worm right against the bank. His short fishing rod—only 5½ feet—kept his cast to about 35 to 40 feet, but it was performing beautifully.

Nothing on earth can match the sound of a ten-year-old's first strike. "Daddy! I've got one!" That bass tail-walked, then headed for the bottom.

After several minutes, though, Alan tired him out and led him to the net. It wasn't big, only two pounds, but to him it was truly a monster. We caught a few more that afternoon, but released them. None compared to that first bass, at least not for Alan. Its head is mounted over the garage door, for all to see.

Alan has caught several more bass since that spring day, and every one of them reminds me of that long-ago day when a five-year old youngster cried, "Daddy, I can't. ⬍

The Real Thing For Trout

by John Crew
Photos by the Author

THE North Carolina Wildlife Resources Commission defines bait as any food that can be beneficially digested by a fish. This can include such unlikely items as canned corn, dough, or even marshmallows, all popular trout baits in the state. But these aren't "natural" baits. Natural bait frequently refers to any juvenile or mature animal or insect that a trout would normally take as part of its natural daily diet.

Natural bait is popular with Tarheel trout fishermen for the simple reason that it is a very effective and productive way to put trout in the creel. Other advantages are that the cost is negligible since usually the bait is abundant in or around the stream and is easy to obtain.

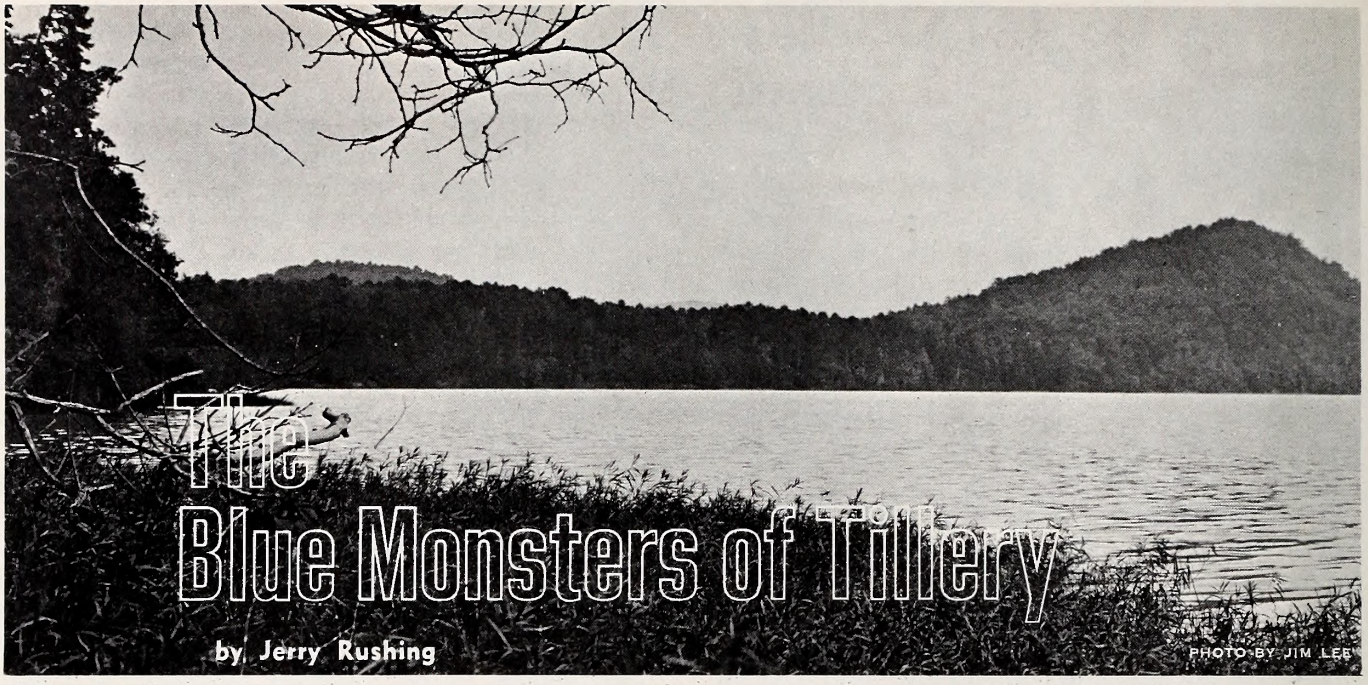
The Carolina trouter using bait must fish on the 1600 miles of "General" trout streams where bait is legal. On the 200 miles of "Trophy" and "Native" trout streams, the regulations permit only artificial flies or lures to protect wild trout populations. (Check regulations for details.)

Equipment for natural bait use can be as simple or sophisticated as the angler desires or his pocketbook will allow. Both locally cut poles and expensive fly rods are used with good results. Salmon egg hooks, a small split shot or two and several feet of light leader are standard tackle. Since technique and know-how are of primary importance in bait fishing, many good fish have been taken with a minimum of equipment and cost.

Careful analysis of stomach contents of landed trout reveal what the fish are feeding on and this is the best indication of bait to use.

Natural bait fishing is perhaps how most North Carolina anglers begin their trout fishing careers. Many an angler has learned the basics of stream approach, where trout lie and how to present the bait while using naturals. Fishing bait in the right place at the right time and in a realistic and lifelike manner requires as much skill and know-how as fishing artificials. If a novice takes the time and effort to learn the art of bait fishing with "natural baits" and uses this technique consistently throughout the season, his catch and knowledge of trout fishing will improve noticeably.

These are but a few of the natural baits that work on trout. Most are found in or near the streams that you will fish. Winged terrestrial insects like this horsefly and cranefly (above) are fragile and aren't easy to keep on a light wire hook. Grasshoppers (above center) make fine midseason bait. Small salamanders fished deep may turn up some big trout. Soft-shelled crayfish (far right) are great fished in the late afternoon. Even larvae like this encased caddis, are worth a try.



The Blue Monsters of Tillery

by Jerry Rushing

PHOTO BY JIM LEE

RANDALL Simpson and I untied the flat bottom johnboat, which was tied on top of the camper of my old pick-up truck. We slipped the boat in the chilly water and as I fastened the seven horse engine to the back of the boat, Randall started loading our gear aboard. We soon were loaded and a few pulls on the crank rope started the engine and we were on our way out to the coves of Tillery Lake. We were armed with bow fishing rigs. Our goal was to try and take one of the huge blue monsters that roamed the coves of Tillery Lake.

Though these monsters are far from the hairy creatures that roam and scream in the swamp of Boogy Creek, when you hang an arrow in one, the excitement might be compared only in a different way. The frightening cry you hear might be that of the bow fisherman when he loses one of these huge critters. I am speaking of the blue fin sucker or buffalo—whatever he is called. The natives call them blue fin—the biologists call them buffalo. We had heard of carp and blue fin being taken up to 45 pounds, but I believe 44 pounds is the largest registered with the Commission; Tillery Lake is full of them.

Tillery Lake is on the Stanly-Montgomery county line, just outside Norwood city limits. The lily beds are numerous in the many coves that back up in the foothills of the Uwharrie Mountain Range. It is an excellent place for swimming, skiing, boating and you will also find some of the state's best deer hunting in the Uwharries. Tillery is probably one of the hottest bowfishing lakes in the entire state and it is big enough to furnish a spot for whoever wishes to bag the big ones.

It is easy to find. Take Highway No. 27 from Albemarle to Troy which crosses over the lake with an excellent boat landing, or you can take No. 52 to Norwood and it is just off this highway.

Most anywhere you go you will find carp in large numbers and if you have lady luck with you, one of the dark blue colored monsters might also come within range of your bow. But whichever you try, you will have a ball. All you need is a pair of polarized glasses, a bow and fish rig and North Carolina special device fishing license which you can purchase for $3.00 and the proper information. (If you are an out-of-stater, a nonresident license is required).

Randall and I were well equipped with four extra arrows and extra line. We rode a few coves looking for something to test our skill. As we pulled into a small cove, we spotted three carp rolling in a lily bed and decided to pull in and watch them a few minutes. I shut the engine off and paddled on in. We didn't want to spook the fish with the engine, so Randall stood up in the front of the boat. Before he could get a shot off they either spooked or decided to cut out for deep water. Whichever the cause, they left Randall standing there half drowned with no target.

We sat there waiting about 10 minutes for them to return. As we sat watching, the silence was broken by splashes on the far side of the lake. It had to be a huge fish for it sounded like a hog taking his daily mud bath. At first I thought it was a wake from another boat, but then I realized we were the only anglers on the lake in a boat. I almost pulled the crank out of the socket. As soon as the old seven horse cranked, I shifted her forward and we set sail for the other side. As we came in fairly close, we shut her off and paddled on in.

We could see the water flying through the overhanging brush that covered the shoreline. They were big and they were running. Our intentions were to shoot from the boat. I pulled alongside the splashes, but the overhanging brush blocked our view. We

nearly went wild. There we were, 10 feet from some of the biggest fish in North Carolina, and yet we could only see the spray splashing up through brush. I looked at Randall as he would draw his bow about half way back then let off with a grunt. He was really in a terrible strain. Then he would shake his head in disgust. I said hang on, that we were going to anchor this vessel and go ashore. This had to be treasure island, and the treasure was splashing the river dry before we could get to shore. We paddled the boat back to a small opening in the thick brush where we could get ashore easily. Randall leaped from the boat and had it tied to a tree before I could get off my seat.

Thirty yards from where we tied up, the fish were really putting it on. I ran to where Randall stood with a full draw. **Zap** and the water flew, I got him. I got him. Oh-heck, he got off. Man was he a big one. Then the splashes started just below me, and they were going to pass below my feet. I drew my bow back and I could see their fins as they sprayed the brush with water. The brush was too thick to shoot through; my heart was in my throat as I held my breath trying to draw a bead on one of the huge monster fish. I picked an opening and waited as one of the biggest fish I have ever seen appeared only six feet from the point of my arrow. I took a quick, sharp aim and slammed the fiberglass shaft home. The water seemed to actually explode like a boulder falling off a cliff, filling my face full.

I grabbed the line and hung on; for a minute I thought he was going to pull me in. I felt the nylon line burn as it cut deep into my fingers. It was slicing my hand like the neighborhood butcher cutting away on a Sunday roast. I had to do something, so I ran around a tree which I later realized was a bad mistake. He surfaced like a sail fish. No one had to tell me what I had when I saw the dark blue color and almost black fins. I knew I had a blue fin, and it had to go close to 50 pounds. And he was using every bit of it trying to head for deep water. His effort was rewarded, the arrow tore out and he was home free.

I had the bow fisherman's dream, a dream of a lifetime and lost it almost as quick as I had tied into him. I mean to tell you that I was really sick. The huge monster was gone and my heart went with him. I don't believe losing my first sweetheart was as bad as losing that fish.

Before the waves got settled, I had tied into another and lost him the same way. I was doing something wrong and I had to figure it out quickly or go home empty handed. Who was going to believe they were all too big to hold? I decided the next one I shot I was going to let him take all the line off my reel. We had always hunted Rocky River, where the fish ran from two to 15 pounds and you just pulled him back to the bank. But it wasn't working on these babies. I explained my plan to Randall and in just a few minutes I had latched on to another one. The water flew and the line sang as he headed for deep water. He took it all off and as he reached the end of the line, he just seemed to settle down.

This monster buffalo is every bit as big as it looks. They don't come easy, these giants, and it takes skill, good equipment, and plenty of luck to put one on the bank.

For an instant, I thought I had lost him—then I felt the line tighten a little. I yelled for Randall; did I ever need that boy's help. I wasn't one bit too proud to ask for it. He knew I had a nice one and he was there in a second.

I gave a little tug on the line and the fish took off up the river and then came back down. As he tightened the line to where it began to stretch, he surfaced. As the big blue fin cleared the water, Randall's eyes looked almost as big as the reel on my bow. He was dancing around like a Comanche brave at a war party. As I got the critter to the bank I could see my arrow was ready to tear out—then when he finally got the shot off, he missed and now to top it all off he had his line tangled in some briars. I said "Hey man, take it easy. Lay your bow down and come over here and take my line." Then he ran to me. Why that fish did not take off I'll never know.

I finally gave Randall my line and I picked up his bow and sank another arrow into the fish and he was finished. We hauled him out onto the grassy bank; we had landed our first blue fin. It was a beautiful blue color, the fins were dark blue. I told Randall I thought I would enter this one in the N. C. Bow Hunters Association Rodeo. We admired our trophy a few minutes and the excitement started again. "I'm going to get me one of those big rascals," Randall said, and he headed for the splashes.

I heard the zing of his reel, as he missed. The excitement of these huge fish had really gotten to him. He is one of the best archers I have ever seen. But his eyes looked as if they would pop out of his head as he tried to explain how big that fish was. I sank another arrow home and called for his help. Before I got my string wound up good, I shot another one. This one was much smaller and I had no trouble landing him; the smallest of the day, he weighed 12 pounds, which would have been considered a real nice one in most places. I landed five of these big monsters and then it happened.

• **continued on page 27**

- Letters
- Comments
- This & That

BACK OF THE BOOK

Rod Amundson Retires

● If you are a hunter or fisherman, or outdoorsman of most any kind, the chances are real good that you know Rod Amundson. For over 27 years Rod has been a strong voice for the Wildlife Resources Commission, including many years over a statewide network of radio stations, through the outdoor column, *Rod and Gun,* in all the major newspapers of the state, and of course, through the pages of WILDLIFE IN NORTH CAROLINA, which he edited for some 25 years.

You may have met him on a Nags Head fox hunt, in a swamp recording the bellowing of an alligator, or simply at any one of the hundreds of sportsmen's clubs he attended over the years. Rod knows the sportsmen of North Carolina, their needs, dreams and feelings because in a real sense, he's one of them. And this won't change, but now perhaps he'll be able to enjoy the fruits of his labor—a little more fishing and hunting. One thing's for sure: he won't be far from wildlife, even in retirement.

It seems mighty trite to say that he'll be missed in Wildlife Commission circles but by golly he will be.

Rod Amundson

First Colony Farms

First Colony Farms, Inc., headquartered in Creswell, one of the nation's largest agribusiness farms, has established the first of a number of planned greenbelts to provide timbered strips for windbreaks, wildlife cover, and landscape aesthetics. Mr. R. N. Campbell, Jr., Assistant General Manager and Secretary of the Corporation, revealed that the company's top management is dedicated to minimizing the effects of the farm's development on the environment and that this tree planting is but one of many programs designed for this purpose.

Approximately 15 miles of greenbelts or 500 acres will have to be planted in the near future to reforest open areas in Washington County. Greenbelts of available natural timber are left as an integral part of the farm's planning in Tyrrell, Hyde and Dare Counties. "Our land use planning dictates that over 175,000 acres will remain in a natural state for wildlife, forestry, and recreation objectives", reported Campbell.

Readings In Wildlife Conservation

A book well worth reading and well worth the price has been published by the Wildlife Society, Washington, D. C. The price of the book is $8.00, and the Society's address is Suite S176, 3900 Wisconsin Ave., 20016.

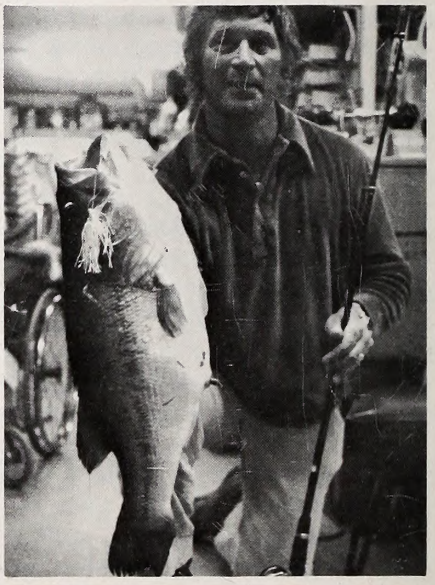
The Title is "Readings in Wildlife Conservation." Although designed primarily for wildlife conservation students at the graduate level, it makes fascinating reading for sportsmen as well as professional conservationists.

Editors James A. Bailey, Colorado State University, William Elder, University of Missouri, and Ted D. McKinney, Oklahoma State University examined hundreds of papers on diversified research in wildlife conservation before selecting 74 papers written by noted scientists and writers. ⬍⬍

Officials of First Colony Farms, Inc. inspect the first of a series of tree plantings to develop natural greenbelts on this property. (Standing left) R. N. Campbell, Jr., Assistant General Manager; Quentin Bell, Timberlands Manager. (Kneeling left) James Ginn, Personnel Manager, and George Henderson, Engineering Dept. Manager.

* * * * *

Although it was caught in the Virginia waters of Gaston Reservoir and represents a new Virginia record bass, its subduer is Raleigh resident, Bob Creel. The 14-pound, 2 ouncer fell to a Bushwacker with a Mr. Twister trailing. Can you top it?



● **Long Ago from page 7**

amounts of clams that mostly found their way to the fish houses in Wilmington. In addition to fishing Buzzards Bay below Fort Fisher we also caught fish at Corncake Inlet and at Baldhead Island. We got a lot of speckled trout down there.

"All this area"—he was pointing to the Carolina Beach Yacht Basin—was beautiful clear sea water with white sandy bottom that was fed for a time by an inlet located about where the pier stands today on the Northern Extension. The sound was much bigger then. When I was very young I faintly remember going out that inlet with my brothers when they were going offshore to reef fish with handlines. It later

closed up with silt when I was about six years old. The sound then had many fish and oysters before the waterway was dredged," Carl said.

Fishing has come a long way since the end of World War I, when Harper McQuillen and the other commercial men got started, and from 1927 when Carl turned it into a business.

Today it's a matter of electronics that guide boats to the offshore reefs many times out of sight of land, and the old days of finding the ledges and reefs by intersecting ranges on land and using a soap-loaded lead line to verify the rock are gone.

Carl has been seen it all happen and has played center stage during most of its growth. You could honestly get away with calling him "the Ancient Mariner" except for the fact he's held up under the years pretty well and can still take a load of anglers offshore for a go at the reef fish. ⬍

• Monster from page 25

I tied onto the prize of the day. I had only a second to shoot as he passed a small opening in the brush. My old Bear bow did its stuff! I knew this was the one, so I started calling Randall before the fish took all the line off. This one was really making the line sing. It actually whistled as he tried to make it for deep water. I must have spent at least five minutes getting the lunker back to the bank. I was on pins and needles; every time I could get him half way back he would take off for deep water. The only thing I could do was let him go. Each time I thought that this was it for sure. But luck was with me.

Here they are: 115 pounds of jumbo buffalo. And maybe the big one got away! That's Jerry on the left, and Randall with the bow.

When I finally got him to the shore I could see the arrow was only holding by a few fibers of skin. One small flutter and he would be gone. My first thoughts were to just fall in the river on top of him. I thought that would not do. My only hope was that Randall had calmed down enough to hit him. I coached him and said "Randall, don't get excited because he is really a nice one. Just relax and take it easy and don't miss him."

Randall drew his arrow back and I stood there trembling and saying take it easy buddy and get him dead center. Old Randall didn't let me down. He hit him dead center and the impact of his arrow made my arrow pull out. I thought "Oh my how close I came to losing the fish trophy of my life." But thank goodness my buddy came through. We now had ourselves a 33-pound blue fin to write about. The biggest fish of my bow fishing career and the happiest day also. We loaded them in the boat and headed for the landing. I was all excited and as we rode along I caught myself singing loud enough to be heard a mile but I didn't care. When we reached the boat landing everyone headed for our boat. They knew by my singing that I had scared up a prize.

Our day couldn't have ended better. Not only did we have photos of the blue fin, sucker, buffalo, carp or whatever he is called: we had killed them ourselves. Just another successful day in the field with the bow and arrow. We had also filled the freezer, for these fish are excellent eating. We had also answered a question many people had asked. Blue fins are existing in North Carolina waters. Our fish won the Bow Fishing Rodeo and I gave my 42-inch silver trophy to Randall for helping me land my prize. The six fish weighed 115 pounds. ⬍

ADDRESS CHANGE NOTIFICATION

Name_____

Old Address_____

_____

_____

New Address_____

_____

_____

Zip Code_____

IMPORTANT:

Enclose present Address Label

Please notify us promptly of change of address.

Use this blank to subscribe NOW — $2.00 a year

Add $1.00 for overseas postage

No stamps, please

WILDLIFE IN NORTH CAROLINA **New ☐**

325 N. Salisbury St., Raleigh, N. C. 27611 **Renewal ☐**

I enclose $_____; send me WILDLIFE IN NORTH CAROLINA for_____years starting with the earliest possible issue.

Name_____

Street or Route_____

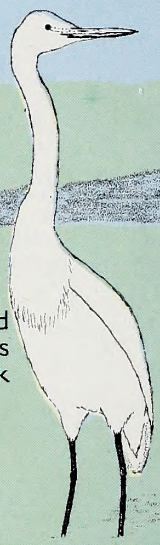
City_____ State_____ Zip Code_____

Due to rising production and printing costs and likelihood of periodic increases in the subscription price for WILDLIFE, a limit of FIVE YEARS is being placed on new and renewed subscriptions.

Some Wading Birds

The WHITE IBIS is a fairly recent addition to the North Carolina scene. It is easy to identify in flight with its black wing tips and red, recurved bill.

The LITTLE BLUE HERON and the LOUISIANA HERON are similar, but the Louisiana has white underparts, while the little blue is solid slaty blue-gray. They may nest in same heronry.



The GREAT HERON, formerly called the American, or common egret, is identified by its yellow bill and black legs.

At the turn of the century, the SNOWY EGRET was all but wiped out by plume hunters. Its black legs with yellow feet give the appearance of wearing golden slippers.

The GREAT BLUE HERON is our largest heron, standing almost four feet tall. It usually prefers to nest in colonies of its own species.

Although the LEAST BITTERN is fairly common in our marshes, it is quite secretive and seldom seen. It is similar to the green heron but has buffy wings and a dark back.

LITHO BY THE GRAPHIC PRESS, INC., RALEIGH, N. C.

LIBRA4S** 1SAMPLE9999 1
STATE LIBRARIAN
LIBRARY BLDG
RALEIGH NC 27601

NER
C45
7: 39/8

North Carolina State Library
Raleigh N. C.
Doc.

Wildlife
IN NORTH CAROLINA

AUGUST 1975

PHOTO BY F. EUGENE HESTER

Water Lily

Summer's beauty comes in many forms, and certainly the water lily deserves a place in the list of these delights.

An Equal Opportunity Employer

STATE OF NORTH CAROLINA

JAMES E. HOLSHOUSER, JR.
GOVERNOR

DEPARTMENT OF
NATURAL AND ECONOMIC RESOURCES
JAMES E. HARRINGTON, JR.
SECRETARY

NORTH CAROLINA
WILDLIFE RESOURCES COMMISSION

ROSCOE D. SANDLIN, CHM. _ JACKSONVILLE
JAY WAGGONER, V. CHM. _ _ _ _ GRAHAM
ROY A. HUNEYCUTT, SECY. _ _ _ _ LOCUST
W. K. ANDERSON _ _ _ _ _ _ _ NEWLAND
WILLIAM C. BOYD _ _ _ _ _ WINSTON-SALEM
WALLACE E. CASE _ _ _ _ HENDERSONVILLE
HENRY E. MOORE, JR. _ _ _ _ _ _ CLINTON
DEWEY W. WELLS _ _ _ _ _ _ _ _ CAMDEN
V. E. WILSON, III _ _ _ _ _ ROCKY MOUNT

CLYDE P. PATTON
EXECUTIVE DIRECTOR

RICHARD B. HAMILTON ROBERT B. HAZEL
ASSISTANT EXECUTIVE DIRECTORS

DIVISION CHIEFS

REX GARY SCHMIDT _ _ _ _ _ _ EDUCATION
CLIFFORD L. BAMPTON _ _ _ _ _ _ _ GAME
W. DONALD BAKER _ _ _ INLAND FISHERIES
DONALD E. CURTIS _ _ _ _ _ PROTECTION
CHARLES R. FULLWOOD, JR. _ MOTORBOATS
AND WATER SAFETY

The Editor gratefully receives for publication news items, articles, and photographs dealing with the North Carolina out-of-doors, but reserves the right to reject materials submitted. Full credit is given for all materials published.

Have you moved recently? Change your address promptly. Either send in an old mailing label from your magazine along with new address or type or print complete old label information exactly as it appears on your magazine.

WILDLIFE IN NORTH CAROLINA is published at the Wildlife Resources Commission offices, Albemarle Building, Raleigh, N. C.

Phone Number AC 919/829-7123

Second class postage paid at Raleigh, North Carolina 27611.

* * *

SUBSCRIPTION RATE—$2.00 per year (12 issues). Add $1.00 for overseas postage except APO, Canada and U. S. possessions. Back issues —$.25 per copy plus $1.00 minimum for handling and mailing; back issues may not be available. Send check or M. O. payable to WILDLIFE RESOURCES COMMISSION. Stamps cannot be accepted. Any employee of the Wildlife Resources Commission may accept subscriptions, or send to WILDLIFE, Albemarle Building, 325 N. Salisbury Street, Raleigh, N. C. 27611.

Wildlife circulation this issue 74,060

Wildlife IN NORTH CAROLINA

The official publication of the NORTH CAROLINA WILDLIFE RESOURCES COMMISSION, Raleigh 27611. A monthly magazine devoted to the protection and restoration of our wildlife resources and to the improvement of hunting and fishing in North Carolina.

VOL. XXXIX NO. 8 AUGUST, 1975

IN THIS ISSUE

Call Him Possum
by Rod Amundson .....Page 4

His Dream: City Wild Land
by Jim Lasley .....Page 7

Sport Hunting
by Dr. Carroll L. Mann, III .....Page 8

What's In Those Old Mill Ponds?
by Jim Dean .....Page 10

Stem to Stern
by Ed Jenkins .....Page 11

Deep Water Brown Trout
by Alan Marshall .....Page 12

Into Big Timber Creek
by Stewart Hardison .....Page 14

Resource-O-Gram .....Page 17

Timber Rattler
by John Crew .....Page 18

Animal Communications
by Betty R. Ford .....Page 20

Robeson County Cat Hooks
by Harvey Burgess .....Page 23

4 a.m. Is For The Birds
by Louise Lamica .....Page 24

Hunter Safety for the Deaf .....Page 25

Back of the Book .....Page 26

EDITORIAL STAFF

DUANE RAVER _ _ _ _ _ _ _ _ _ _ EDITOR
LUTHER PARTIN _ _ WRITER-PHOTOGRAPHER
JIM DEAN _ _ _ _ WRITER-PHOTOGRAPHER
TED DOSSETT _ _ _ WRITER-PHOTOGRAPHER

An objective of all levels of government should be to achieve and sustain a balance of the social, ecological, and economic benefits derived from natural resources. Without such balance none of the factors on the scale will be worth weighing.

Although the red-shouldered hawk is one of the most common hawks of eastern North America, it isn't often that one will sit for a portrait like this. "A lucky shot," photographer Chris Marsh calls it. The characteristically banded tail is not evident in this photo, but it is one of the identifying field marks. All hawks and owls are protected by law.

Call Him POSSUM

by Rod Amundson
Drawing by Joyce Rhames

"Hi!" said de 'possum, "Le's
shake dat 'simmon tree
"Golly," said de rabbit, "You is
shaken 'em on me!"
So dey picked wid dere claws,
and dey licked dere paws,
And dey tuck a heap home to
dere ma's.

The above is only one example of the hundreds of instances in which the opossum appears in the lore and folk music of America. Someone said the opossum is a cat put together by a committee. Because of its peculiar habits and ridiculous appearance, plus the toothsome flavor of its flesh, the opossum has been extolled in story and song since the days of the early colonies.

One of the first Virginians, a man named Purchas, described the opossum thus: "The opassum hath a head like a swine, a tayle like a rat, and hath under her belly a bag, wherein she carrieth her young." It would be difficult to describe this animal more vividly in modern English. The bag, of course, refers to the marsupial pouch that makes the opossum related to the Australian kangaroos and wallabys.

Like the names of many of our common wild animals, the opossum's name comes from the language of the Indians. It was only natural and logical for Europeans, coming to a strange land and finding strange new animals, to have accepted and used the names given to these species by the natives.

Scientifically, the opossum is called *Didelphis virginiana.* The word *Didelphis* comes from two Greek words, *di* meaning double, and *delphos* meaning womb. A discussion of the life history of the opossum will show how aptly these two Greek words name the animal. *Virginiana* is a Latin word meaning from Virginia. Other Indian names are: *M'possum, Much-woapingus, Singteshda-tanka, and Shukata.*

Biologically, the opossum is one of the lowest forms of mammals in this country. Because of the abdominal pouch in which females carry their young, it is very closely related to the kangaroo of Australia. Although typically an animal of the Southern states, it has been found as far north as Minnesota and southern Canada. During the past couple of decades the opossum has extended its range far north of its most frequented habitat. A Senator Young of Iowa reported in 1915 that the opossum had come as far north as Des Moines and had first appeared in that State ten years earlier. In 1939 I took a specimen in Dickinson County, Iowa, which lies on the Minnesota border. The event occurred on a night in January during sub-zero weather. Its ears and the tip of its tail had been frozen many times, and much tissue from both ears and the tail was missing. At the time of capture the opossum and I arrived at a straw stack at the same time, both in quest of English sparrows which had burrowed into the straw to keep warm. The animal was subsequently caged and became quite tame. It consumed enormous quantities of sparrows taken from the straw stack on cold winter nights.

Although I had read of opossums since early childhood, the one I encountered at the straw stack was the first I had ever seen. Its first cage was a wooden egg crate, but as the animal grew in length and girth a larger cage became necessary. We were in doubt at first as to what he would eat. We took a hint from the fact that

PHOTO BY JAMES A. SULLIVAN

PHOTO BY JACK DERMID

The feigning of death—"playing possum"—is a common occurrence although it isn't completely understood. It actually may be an involuntary "fainting" that the possum can't control. At right, rapidly growing baby possums remain in the mother's pouch for a period of 12 weeks, and then are weaned but continue to stay with the mother for several additional weeks.

he was hunting for sparrows and fed him plenty of them. Later feedings became a study of the food habits, or at least a study of the vast range of foods the animal would eat; it ate almost anything. It shared table scraps with our Scotch Collie and ate them with the same relish that the dog did. (They did not eat together, however.) It ate a wide variety of fresh and cooked fruits and vegetables, was extremely fond of candy, and once became disgustingly intoxicated on homemade wild grape wine.

Although the animal, which we named "Possum" logically enough, became tame, the only member of the household who could handle Possum with impunity was our hired man, Joe. Joe was fresh from Germany, and his English was almost as incomprehensible to me as German. Joe spent hours after work at Possum's cage. He would poke his forefinger into the cage, fascinated when Possum played 'possum. He had a kind of chanting routine worked out. In a high pitched voice he would drone: "Possum - possum - possum - possum - possum - possum" until he was completely out of breath. This never failed to bring Possum back to "life" again, and then Joe would pick him up and handle him about like a tomcat. We nearly had to fire Joe and dispose of Possum when Joe gave Possum a handful of raw red onions to eat. We moved the cage down hill and down wind for a few days after that. Possum ended his days as a feast for an itinerant dance combo.

Only in the last 40 years has the reproduction cycle of the opossum been completely understood. Although only one litter of young per year is usual in northern states, two broods are common in the south. As many as eighteen young may be born in a single litter. Litters average between 6 and 7 young. Females have but 13 teats, however, and this makes 13 the maximum number of young that may survive in one litter. The gestation period lasts only about twelve and one half days, and the young are so tiny at birth that a tablespoon would hold a litter of 18. Young opossums are born in an extremely embryonic state, being completely hairless, blind, and almost entirely helpless. During the birth period the female creates a saliva-moistened pathway to the opening of the abdominal pouch. The young make their way along this skidway into the pouch and seize the first teat encountered. Their mouths are extremely underdeveloped, being at best a small round opening at the front of the head. Once a teat has been grasped, the youngster clings to it until it has reached sufficient growth to enable it to leave the pouch and explore the small world of its mother's long fur. The young remain with the mother until they are weaned and are too large to go back into their living abode. A mother opossum with a dozen small passengers riding on her back is a sight to see.

Animal literature is spiced with pictures of mother opossums holding their tails up over their backs with several offsprings hanging from their parent's tail with their own tails wrapped around it. Such pictures appear so freqently that there is little doubt that such activity does occur. It is well known that young opossums do ride around on their mother's back, using their monkey-like feet to hang on to the long fur.

Something should be said about the business of "playing 'possum." With the approach of danger, the opossum puts on an act which has saved the life of many a specimen. The opossum falls over on its side or back, closes its eyes or rolls them back toward the skull, opens its mouth in a gasping attitude, shows its 50 teeth like a model for a toothpaste ad, and lets its tongue dangle out of the jaws. Only seasoned 'possum hunters and 'possum dogs fail to be fooled by this little by-play. Many a 'possum hunter has laid his obviously expired quarry on the ground to turn back a moment later to find it very much alive and absent.

Conscientious observers have found that during the "dead dog" act, the opossum's heartbeat and breathing come almost to a standstill as though it were actually in a state of coma. The ability of the opossum to sense the passing of

danger and scurry away makes the possibility of actual fainting or coma very unlikely.

Although the opossum has many natural enemies, man is by far its most oppressive foe. Undoubtedly the clearing of woodlands has had an appreciable effect on opossum populations as compared with their original state, but the usefulness of its fur has let the opossum in for wholesale killing. The flesh is considered toothsome by many people, particularly in southern states, and this fact adds to the toll. Although opossum furs bring a very low market price during periods of fur industry depression, the ease with which opossums may be taken sends thousands of furs to the market over the country each year. The guard hairs of the fur are coarse and wiry, but when the pelts are plucked a soft and fairly durable underpelage is exposed. Tons of opossum furs have been shipped to European markets where they were converted to fur trim on inexpensive coats for women.

The opossum is one of the several North Carolina animals which come under the category of both game and furbearing animals. Opossum hunting is not considered to be an especially high class sport, but every country boy and his dog know the fun of scrambling through the woods at night in pursuit of 'possums. There is no special breed of opossum dog in use. Nearly any ordinary mutt of mixed ancestory can be persuaded to become a passable opossum hound. He needs only to pick up the scent, follow it to the animal, drive the latter up a tree and bark at it until his master arrives. Guns are unnecessary. The opossum is anything but an acrobat, although his feet are adapted to tree climbing. Usually he will reach a level of the branches he considers safe and sit more or less calmly until he has been shaken to the ground or dislodged with clubs and stones. A .22 caliber rifle is a convenient means of dislodging the animal and dispatching it at the same time.

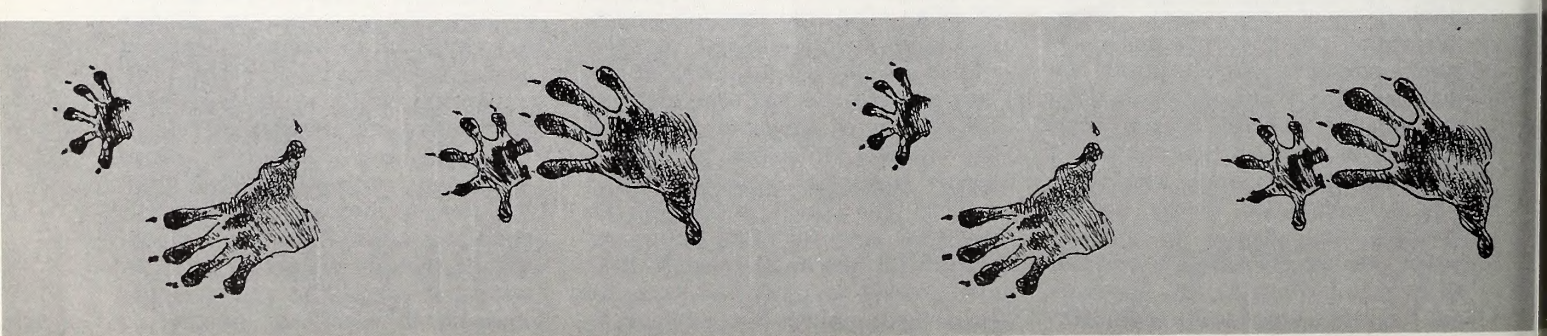
Besides men and dogs, the opossum is oppressed by a number of predatory birds and animals. Red and gray foxes include the opossum in their diet, and mink and weasels kill small specimens. The larger birds of prey, such as eagles, hawks, and horned owls, take advantage of the opossum as a source of food, and the species is subject to the usual run of diseases and parasites.

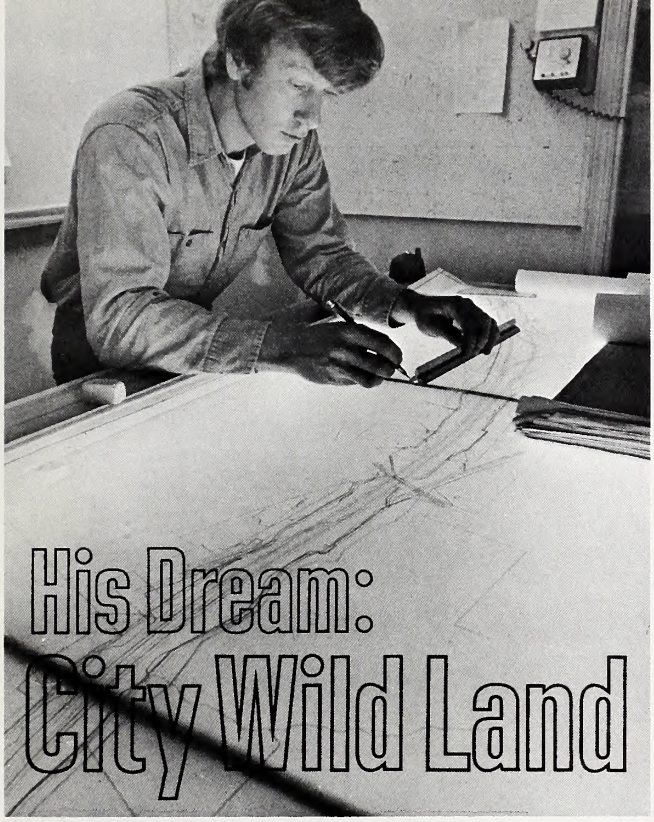
There is little apparent need for an active program of game management for the benefit of the opossum in North Carolina. Land use practices which benefit other small game benefit the opossum. The animal is extremely prolific, and can adapt itself to a wide variety of living conditions. It is equally at home on the ground or in trees, and for a home will use anything from an abandoned woodchuck den to a hollow tree or a crevice in the rocks. The nest is a somewhat indifferent affair, usually made of twigs and leaves haphazardly scraped together.

The opossum is described as stupid, dumb, awkward, clumsy, and ridiculous. Nevertheless, it is an interesting animal neighbor, and certainly a valuable one. Despite hunters, trappers, predators, disease, and parasites, the opossum, because of its prolificacy and wide selection of food and living quarters, remains an important source of sport, food, and wearing apparel. ◆

PHOTO BY GAIL W. SULLIVAN

Possums are a bit on the slow side, but are good climbers and can move along the ground rather rapidly for short distances. They should be handled with extreme care since they have sharp teeth and strong jaws.





His Dream: City Wild Land

PHOTOS BY JIM SPARKS

Jim Starrett, forester for the City of Durham, watches over a clearing project (above) on city land. In addition to planting thousands of trees last year, he helped establish many wildlife plantings also.

by Jim Lasley
Chapel Hill

JIM Starrett has visions when looking over a deserted cow pasture.

He sees a wild land of loblolly pines, sturdy oaks, valuable black walnut trees, coveys of quail feeding on lespedeza, rabbits nibbling under a bush row, even a herd of deer grazing at sunrise and paths along the river where an occasional visitor might stroll.

Starrett already is at work making his vision a reality. He's planting the trees and putting out the seed for the wildlife vegetation. Now with a little help from mother nature and the passage of 10 or 15 years maybe . . .

The site of this wild land, as Starrett calls it, is not a remote wilderness, but 15 minutes from the center of downtown Durham at the Eno River Waste Treatment Plant.

A waste treatment plant may not sound a likely place for wild lands, but it is as far as Starrett is concerned. He is environmental management coordinator for the City of Durham. That means he is in charge of the city's unused woodlands. He was hired about 1½ years ago to make something out of this land.

The North Carolina League of Municipalities believes that Durham is the only city in the state involved in a forestry management program.

The Eno plant includes about 160 acres of mostly pasture along the river. Starrett will leave 30 acres for expansion of the plant. The rest goes into his wild land.

"My basic objective is to improve the value of the timber," he said. "Beyond that I want to provide for wildlife, recreation and watershed."

At the Eno plant site this is what Starrett has done: Planted 39 acres of loblolly pines, five acres in slash pine and 1½ acres in black walnut and worked with the North Carolina Forest Service on an experimental hardwood plot. Eleven species of oak have been planted. Later another group will be planted under different circumstances. The forest service wants to see which grows best. When the experiment is over in 10 years, the oaks become the property of the city.

The N. C. Wildlife Commission has supplied Starrett with lespedeza and cow peas which he has planted as wildlife food.

Eventually some of the trees will be harvested and sold for pulp or lumber. Starrett could plant the pasture in pine and reap more money for the city, but he won't because most wildlife does not flourish in a pine forest.

"I would feel bad planting only pine," Starrett said. "The wildlife cover might not be anything you could call advantageous to the city, but it is the desirable thing to do. It will provide a haven for wildlife and heaven knows enough land is lost every year for wildlife."

Starrett's wild land may become a nature park. The city recreation department has asked him to leave room for trails along the Eno which runs through the property.

Starrett said he is not sure how much land the city owns. The uncertainty is caused by numerous small tracts and slivers acquired during the years.

The city's big tracts are around waste treatment plants and Lake Michie, the source of the city's water supply. Much of Starrett's work has been on 1,688 acres in rural areas.

"That includes 30 different parcels," he said. "And each offers some forest management opportunity either by thinning, planting an open area, clearing and replanting or doing nothing."

Last year Starrett planted 35,000 trees on city land. After this summer he expects the number to climb to more than 70,000 trees on nearly 120 acres.

Starrett said the city owns very little valuable timber now, but he hopes his efforts will change that. His first harvest yielded several thousand dollars.

He operates out of a basement office in City Hall, but spends much of his time on the land.

Starrett says he does not make quick decisions on his projects. He walks the land, looks at it and talks about it before acting.

"Some people might not get much out of doing this. It depends on your tastes," he said. "But it's kind of fun doing something on the land." ◆

PHOTO BY LUTHER PARTIN

Sport Hunting

by Dr. Carroll L. Mann III

MY profession is neurosurgery and as such I am in a field of medicine that is probably the most scientifically precise medical specialty today. I bring this up only to point out that I am used to dealing in facts and not emotions, and it is facts that I wish to present here.

Sport hunting is my hobby; conservation my love. Sport hunters today are facing a bum rap, and I for one am tired of it.

The modern day trophy hunter is only remotely akin to the market hunters of yesteryear. Yet, it is today's hunter that takes the blame for the demise of the passenger pigeon and the destruction of the American bison.

It is a fact that the passenger pigeon was a victim of man's attempt at defending his crops and land. Few of us can comprehend flights of **millions** of birds. Farmers in Canada and the United States cursed the pigeon for the destruction they caused to their crops and the ruination of their orchards which fell under the weight of the roosting birds. They were netted and clubbed but usually not shot as the price of gunpowder did not warrant the low value of the bird in the market. The bird was a victim of human self-defense as well as disease and sport hunting played no part in its demise.

The bison or buffalo on the other hand was almost eliminated by the market hunter with habitat destruction also playing a part. America's explosive growth in the nineteenth century aided both. It was the American sport hunter that ultimately put an end to market hunting and saved the buffalo.

Hunting was a necessity and a way of life in colonial days. It was a far cry from European tradition when a landowner owned the game on his property and guarded his exclusive right to hunt it. It was the common folk and not the landowner that migrated to these shores and the neighborhood meat market was still far away in the future. Wildlife was on the fringe of every farm and settlement and hunting became a

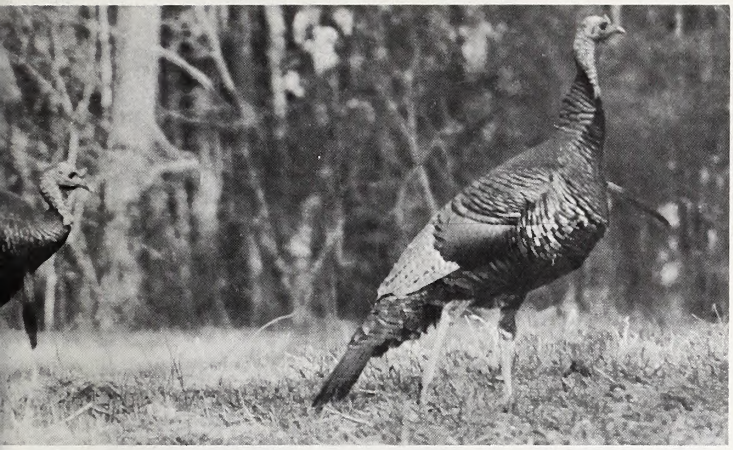


PHOTO BY WAYNE BAILEY

The harvesting of game animals by hunters is a difficult concept for the nonhunter to understand. It is not only biologically sound, but may be essential for the well-being of the animal population.

well-established and a much needed American tradition.

With the population explosion of the 1800's, market gunning grew to alarming proportions. Game populations were thinned further by expanding settlements. But even when it became easier to buy meat than to shoot it, Americans continued to hunt; and their attitude towards the game they pursued gradually changed.

This was the birth of sport hunting. Many early sporting clubs and associations grew because of a mutual concern for wildlife welfare. But their efforts were, by and large, ineffective and disjointed.

The support the nation needed crystallized under the national leadership of Teddy Roosevelt and the modern conservation movement was born. Indeed the relationship between sport hunting and wildlife conservation was intimate by the very fact that both were founded by the same men.

Teddy Roosevelt was joined by hunters like George Grinnell, Hornaday, and Gifford Pinchot in the fight to save our wildlife. It was these hunters that were responsible for our original game management laws.

When Aldo Leopold expanded his thesis on Game Management in 1933, it was the sports hunter that supported Leopold and demanded that his recommendations be put into practice.

Today, sound game management throughout the country is backed by concerned hunters making up such organizations as the National Wildlife Federation, the Safari Club International, Ducks Unlimited, and many others.

Here in North Carolina, the North Carolina Wildlife Federation now under the leadership of Charles Shaw has a place among the top two or three state wildlife federations in the country. This federation is composed of such outstanding clubs as the Wake County Wildlife Club in Raleigh and many other equally outstanding clubs throughout the state with a total membership of several thousand. They carry on the efforts.

When Teddy Roosevelt and his hunting friends began their fight to save American wildlife, prospects were bleak. In 1900, it was estimated, there were only five hundred thousand deer left in the United States. The elk herd which once numbered in the millions had been reduced to a mere fifty thousand animals. Pronghorn (often called antelope) had once rivaled the buffalo in numbers, but at one point only about twelve thousand remained. Wild turkeys had been eliminated from 90 percent of their original range. The restoration was slow but gratifying. Hunters were at the head of every significant conservation program implemented in this country.

The Lacey Act of 1900, which outlawed market hunting, was instigated by hunters. Hunters insisted on the establishment of bag limits, season restrictions and licensing requirements. The Migratory Bird Treaty, which in 1916 (passed by Congress in July, 1918) created federal authority to regulate waterfowl hunting, was actively supported by hunters. The passage of the Pittman-Robertson Act in 1937 created an 11 percent excise tax on sporting arms and ammunition and was largely due to the efforts of sport hunters. When the repeal of this tax was proposed in the Johnson Administration hunters took an almost unprecedented stand in favor of its continuation.

We have come a long way. Where once there were half a million, an estimated sixteen million deer now roam the land, more than were here when the pilgrims arrived. Hundreds of thousands of pronghorn and over a quarter of a million elk now live on the once-barren western ranges. Wild turkeys are so abundant that they can be legally hunted in 32 states.

Money derived from the sale of hunting licenses and from excise taxes on sporting arms and ammunition is the major revenue used to operate wildlife conservation programs across the country. Hunting license sales alone created one hundred million dollars a year and over 1.7 billion in the last forty years. Excise taxes on sporting arms and ammunition brought in an additional five billion dollars since 1937; Federal duck stamp sales added another 125 million since 1934. These are facts.

Fifteen years ago, few would have dreamed that hunting could face any dire threat. But led by an emotional few and the seemingly increasing propensity of the American people to jump on any band wagon, hunting today is indeed threatened. There exist in this country several organizations run by a relatively small number of people but with over nine million dollars at their control for the sole purpose of banning all hunting. These people are staunch preservationists and their attack on the hunter is concerned only with emotions and not fact. The anti-hunters have no alternative program. They offer nothing to replace the system of licenses, and the tax on sporting arms and ammunitions.

How did we arrive at this point? For openers, a generation of city-dwelling Americans grew up seeing wildlife through the eyes of Walt Disney and his imitators. Bambi and his mythical world of birds and animals became nicer than people. All feathered and furry creatures love each other and nothing ever dies except at the hands of the heartless hunter. The fantasy factories keep pumping out sentimental, sympathetic "animal stories" and the public keeps accepting them as reality and hunting becomes a virtual crime.

The stage is set, the band wagon is rolling. The preservationists with their millions are now enticing the 98 percent of our population that makes up the non-hunting segment to join them. The frightening thing is that they just might. ⬍

What's In Those Old Mill Ponds?

FISHING

by Jim Dean

PHOTO BY JOEL ARRINGTON

"THAT old lake is the fishiest looking place I've ever seen, but nobody ever catches anything. There's bound to be some really big bass in there, but they're too smart."

I'll bet you've heard comments like that, and maybe you've even said the same thing yourself. I know I have.

Like most fishermen, I've always wished I could find out exactly what lives in some of the old lakes and mill ponds I've fished. How many fish are in there? Are there any big ones? Why can't I catch them?

Recently, I happened to be talking to Jimmy Davis of Elizabethtown and Cape Carnes of Siler City about this subject. Jimmy and Cape are fisheries biologists for the N. C. Wildlife Resources Commission, and I think you'll find what they had to say quite interesting.

Both Jimmy and Cape have studied many old lakes and sampled the fish in them. In some cases, they've actually drained a lake for restocking.

"In fact, we just finished draining a lake in the Sandhills and what we found is fairly typical of that area," said Cape. "Although this lake covered 22 acres, we found only 22 bass in it that weighed a total of 105 pounds. There were no small bass in the lake, nor were there any real whoppers. The average size of these bass was about five pounds. With so few bass, it's small wonder that not many were caught.

"Even more interesting is the fact that of all the panfish that had been in the lake, I didn't see a single one that was large enough to be called good eating size," said Cape. "There were a lot of rough fish in the pond, but the gamefish population was both small in size and number.

Jimmy explained that this is a rather common situation in old lakes. One-year class of bass will become dominant, but there won't be many of them. The eggs and young fry produced by these few remaining bass are quickly eaten by the many other small fish in the lake, and that prevents the bass population from growing. Without a healthy bass population to keep the panfish under control, you wind up with a lake that holds just a few large bass and a huge amount of tiny bluegills and other panfish. The panfish can't grow larger because there isn't enough food for them to get big.

Obviously, that means that the reason you don't catch many fish in these old lakes is simply because there aren't many catchable sized fish in them. It's certainly not because the fish have gotten too smart to catch.

"When a lake gets in this situation, we say that its fish population has become unbalanced," said Jimmy, "but actually, it's quite normal for this to happen over a period of years. For various reasons —and we don't know all of them—a few lakes resist this tendency and continue to provide good fishing over the years, but that's unusual."

What can be done about a lake when fishing gets poor? Good question, and it may be of interest to mention a few things that you can do.

One thing that you can do is to partially drain the lake during the winter months. This drawdown concentrates the fish in a smaller area and permits the predator fish—like bass—to eat more of the smaller fish. Also, the dry banks produce grasses and other foliage that will enrich the lake when it is refilled in the spring. With fewer fish and more food, the fish can grow to a larger size.

In many cases, it is better to simply start over by draining the lake completely then restocking it with a more balanced fish population. As this new population grows and expands, it will provide good fishing for a number of years until the pond again becomes "unbalanced."

Of course, in many cases—especially with old lakes—there is no way to drain them short of blowing up the dam. So, over the years, they get unbalanced and the fishing may continue to be poor for years.

That would certainly explain why so many of those "fishy looking" old mill ponds rarely yield many good fish. It also makes me feel a little better. Heck, I always thought I didn't catch fish because I forgot to spit on the bait. ⬍⬍

Stem to Stern

BY ED JENKINS

• My arms were beginning to ache as I fought against the ski rope desperately trying to maintain my balance. At the other end of the ski rope, my wife Gail and brother-in-law Marc in the boat pulling me were getting a good laugh at my struggling form. "I'll show them," I thought as I began easing myself toward the outer edge of the boat's wake. The short drop of my right ski as it crossed the crest of the wake was all it took to send me sailing through the air toward the inevitable meeting with the water. As I hit the water, I felt my body twist, then roll and knew immediately the fall had been the classic "tail-slapper-back-roller"—one of my better falls.

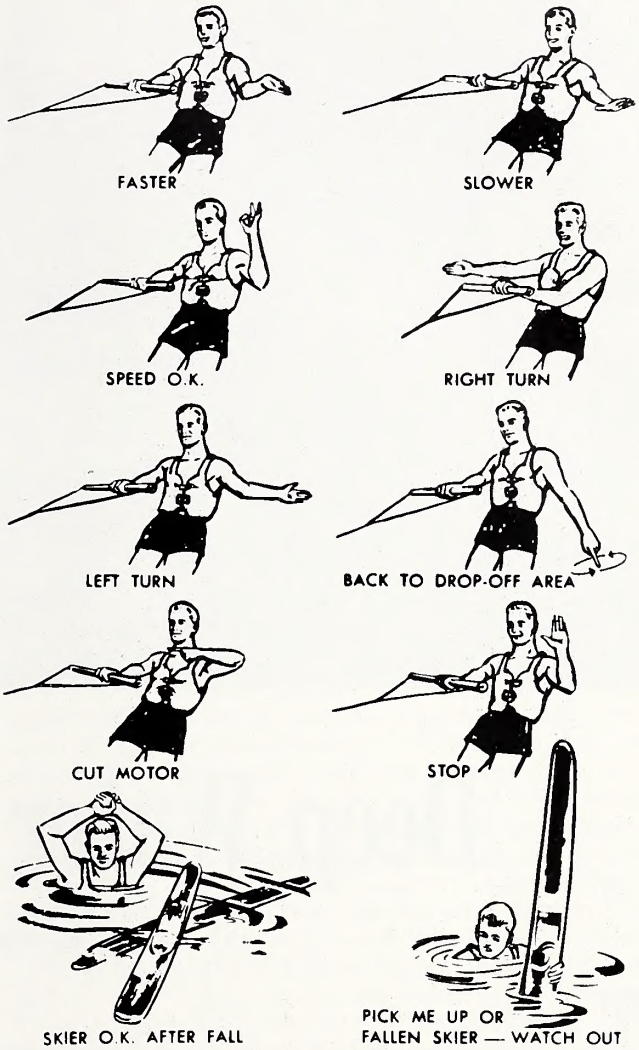
I raised my arm to signal I was okay then let it drop, closed my eyes, and rested in the water supported by the ski vest. The increasing pitch of the underwater whine of the outboard signaled the boat was getting near, and I raised my head to hear Marc jokingly say "Way to go, Ski King."

That particular skiing episode occurred almost three years ago. While I have had more than my share of falls on water skis since then, I have recently learned there are certain ways skiers should try to fall.

As high wire aerialists know, momentarily losing one's balance and falling are not the same thing. Some water skiers upon losing their balance tend to give up and let themselves fall when they possibly could have recovered. However, if one is sure he is falling, knowing how to take a fall can make the worst part of water skiing safer and less painful.

Our thanks go to Al Partin of the Pembroke Water Ski Club in Edenton, North Carolina for the following tips on how to take a fall while water skiing: *For normal skiing on two skis, let go of the tow rope and try to fall backward away from the skis. The backward fall will help one avoid contact with the skis and let the force of the fall be taken by the legs and backside instead of the face and neck. Falls while slalom skiing are usually fast and hard. Skiers should try to fall away from the ski and keep the body rigid. In competitive slalom skiing, any fall is going to be a bad one because of the speed involved and the lack of time to prepare for the fall. Barefoot skiers and skiers travelling especially fast should pull their knees up into their chest in a tucked position and try to hit the water as a rigid, rolling ball. Skiers ramp jumping who lose control in the air should hold on to the ski rope and let their heads go toward the boat with the skis trailing behind them. Jumping helmets and ski vests are a must for this sport.*

WATER SKIING SIGNALS:



Most water skiing accidents are caused by recklessness and "showing off." The American Water Ski Association suggests the following water skiing safety fundamentals to keep skiing outings both fun and safe:

DO

Learn to water ski by taking instructions from a good water ski instructor.

Know how to swim and wear a flotation device; a ski belt or jacket.

Look ahead and know where you are going at all times.

Stay away from solid objects, such as docks, boats, etc.

Be courteous and stay a reasonable distance from others—such as fishermen, swimmers and boatmen.

Run parallel to shore and come in slowly when landing.

Learn new maneuvers progressively.

Have an extra person in the boat to watch the skier, or use a wide-angle rear view mirror.

If you are all right after a fall, clasp both hands overhead to let the driver know.

Hold up a ski after taking a fall in a well-traveled boating area.

Check your equipment for dangerous, sharp or protruding objects on skis—such as wing nuts, loose runners, slivers, etc.

• **continued on page 21**

PHOTO BY JACK DERMID

Deep Water Brown Trout

by Alan Marshall

THE sky was no longer black. It was more like gray, and I saw the east just starting to show red when I tossed my gear into the back seat. I had eaten a big breakfast and was glad to be getting an early start. From experience I knew there was nothing worth listening to on the radio, so I rode all the way in the silence of the morning. The two hours passed more like two days.

I pulled off the main road around 7:30 and drove north to where a Game Land's trail would lead me in to the creek. The road was dusty and the old six-cylinder lurched and strained up and around the mountains. Finally, deep in the forest I stopped the truck and got out. I looked around. The sun was streaming light down through the big hardwoods. The sky was clear. It was warming up in a hurry. Summertime in the mountains, a good day for the dry fly, and I pulled on my hip boots.

I took my fly rod out of the aluminum rod case, jointed it, and lay the rod case back in the truck. I put on the reel and threaded the finely tapered leader through the guides. I tied on a size 14 hairwing Royal Coachman to the tip of the leader and a size 12 March Brown nymph as the dropper. I soaked the Coachman in dry fly oil and false casted it a couple of times until it was dry. I wanted it to float high and natural, and I figured—with a laugh—that those trout I didn't catch on the dry fly, I would take on the nymph. (Honest, I'm the old bull in a China shop routine when I fling the floating fly. I needed the nymph to give my confidence a boost.) I pulled the creel and landing net over my shoulder and started down the mountainside.

I slipped and slid for about half a mile down the steep, rocky trail through the shadowed sunlight of the trees and came to a meadow near the creek. I sat down to catch my breath. I listened to the wind as it moved through the trees. In the distance I heard a crow squawking. I could just hear the rushing-gurgling of the creek down the mountain. It was a good sound.

As I made my way down I saw four deer, a buck, two does, and a fawn, and by the time I came to the stream I was very excited. The water ran high. There had been something like three inches of rain in the past couple of days, but the water was as clear as cold gin. Man, this is going to be a day to remember, I said to myself as I stepped into the stream.

Five hours, three lost flies, two mended leaders, and not one strike later, sitting in the hot sun on the porch of a local store, drinking a peach soda and eating my lunch, I thought, sure, sure. Some day to remember. I'd be catching as many trout if I were at home in the garden with a hoe in my hands. And I wouldn't have all these bugs flying around me either. I guess I was about ready to give it up, to leave that other life, to make the transition from trout fisherman to human being again.

I walked back into the store and put my empty

PHOTO BY JACK DERMID

Fooling trout with deeply fished flies requires a change of tactics and the successful angler must be flexible to changing conditions. Many of us find ourselves in fishing ruts.

PHOTO BY JIM DEAN

The local crossroads store may be a storehouse of information for the visiting angler. But it may take a real diplomat to extract the secrets. Good luck.

bottle in the crate. I noticed an old man sitting on the drink box in the corner over against the wall. He was saying something about his young nephew Dennis. Said he'd brought one in the other day 19 inches. On a spoon. A spoon? But what about the sacred dry fly? I thought you were supposed to fish the dry fly this time of year.

A few minutes later back in the Game Land I found myself knee-deep in the creek again, this time tying on a size 10 Black Nose Dace and (Don't ask me why. Maybe I was thinking of all those Japanese beetles in the garden at home.) a size 12 fly designed to imitate a hellgrammite, and saying to myself, Yeah, but what about the dry fly. I did not have to argue with myself very long.

I cast about 20 feet in the front of me toward a big rock on the other side of the stream. The water looked deep there and in the pull of the current the flies went down. I stripped line off the reel and held the rod high. There was a tug on the line. I pulled against the taut line. The rod bent and jerked as I brought in line with my left hand. The trout sloshed near the surface and quickly went deep. He lay there for a moment shaking his head against the constant pressure of the rod tip. I brought the trout to the surface again and it made a rush toward the big rock, the click-reel whining as the line played out. He tried to run deep. I put on pressure and began to bring him in. He was tiring. I eased him, flopping on his side, against the current toward the shore. Holding the rod high over my head I brought the trout over the net. Moving the net upwards, I relaxed the rod and lifted him out of the water. An 11 inch brown trout lay throbbing in the meshes of the net. I wet my hand and unhooked him. He was a native fish, hefty, well-developed. He had taken the hellgrammite. I put him in my creel on a bed of wet ferns and sloshed downstream.

I cast out again and let the flies drift toward a hole in the bank where a tree grew out over the water. The rod was parallel with the water and I hardly felt the tug on the line. I struck quickly, and backing up into the current, I worked the fish upstream away from the overhanging branches. This one was smaller than the first one, and I gave him the rod tip and watched him thrash in the current. I lifted him, still wriggling, over the net and out of the water. It was another wild brown, a good eating-size fish. Like the first one, he had gone for the hellgrammite. I put him in my creel and waded to shore. I sat on a rock and had a smoke and looked into my creel several times to see the trout I had caught. When I finished my cigarette I cut both trout open from the vent to the tip of the jaw and removed their insides. I washed them clean in the cool water and put them back in the creel. I examined the contents of their stomachs and found that they had both been feasting on Japanese beetles.

With its shiny green color of peacock herl and its fat body, the hellgrammite fly looks like the beetle or even the larger June bug. It's a good fly, and I caught another nice brown on it that day.

The hellgrammite fly is usually tied on a size 12 hook, or larger. The body is weighted with lead wire, and consists of peacock herl wrapped with gold wire or tinsel. The tail is made of three pieces of peacock herl. Brown hackle is wrapped over the forward one-third of the body to simulate legs.

The Black Nose Dace is a good fly, too. Fishing the fast, deep runs I caught two more trout on it, the largest nearly thirteen inches long. In all I caught six good trout that day. I released the two biggest fish and kept the other four to eat. It was as much fun as I have ever had fishing.

On the long hot trip home I stopped and bought ice and filled the creel with it to keep my catch chilled. When I got home and they were fried in cornmeal and bacon drippings and served with garden-fresh vegetables, it really *was* a day to remember. What's that? You're a purist? Only eat speckled trout taken on the floating fly? Move over then, and pass that platter of deep water brown trout.

INTO BIG TIMBER CREEK

by Stewart Hardison
Photos by Jim Dean

THE last mountain lion in North Carolina was reportedly killed in the western part of the state in the year 1900. But even today, 74 years later, rumors circulate among the hill people that the big cats are still "out there." And though these rumors are never based on anything more than a far-off scream in the night or a pair of eyes gleaming in a car's headlights or sometimes a mysteriously mauled coon dog, they will not die. And while I have doubts as to whether a conclusive shred of evidence will ever be found, the rumors live for me. Admittedly this belief is an act of faith; it makes little sense to think a mountain lion could be prowling the almost suburbanized mountains of North Carolina.

But however irrational this belief is—call it hope even—I still persist in believing. For the mountain lion, like a hawk sailing high in a thermal, is one of those curious fragments of the natural world that can loom in a man's mind and become the very essence, symbol, of what is wild. And, as the idea of wilderness becomes increasingly elusive, this symbol, or any particular natural symbol, becomes more and more important.

These symbols, they help fill the growing void in that part of a man's heart that is reserved for what is wild. That is why I believe in a mountain lion that rationally can't exist and that is one reason why I enjoy fishing for trout. For the trout, to me, is one of those symbols. Only it is a symbol that I can see, experience. And when I'm on a remote stream and see a wild trout holding in a clear swirl of current, his every spot distinct and his spread fins the color of sunlight and reflected pebbles, then I have the heartening feeling that nature, at least somewhere, is having her say.

Aside from actually catching a trout and the sometimes intricate ritual involved in doing it, I believe that what fires a trouter's heart the most is the place he fishes. And when I think of trout fishing in North Carolina, I think of a place called Big Timber Creek. Shortly, I will try to tell you something about that place, but for now I must confess to you that I have fictionalized its name. Admittedly, I do this partly out of angler's greed. But there is another reason, too. And this is the fact that Big Timber Creek, like any good trout stream, is a fragile watercourse of living things. And, should this watercourse be exposed to a sudden and dramatic increase in fishing or other recreational pressure, these living things and the aesthetics entwined with them could be irretrievably damaged. Wanting no part in that, I have therefore decided to give a real place a fictional name.

Like numerous other North Carolina trout streams, Big Timber Creek's entire watershed lies within the boundaries of a national forest. Even so, it is easy to get to; gravel roads follow the ridgecrests above it and one even spurs off to give access to its headwaters. Also, the heavily traveled Blue Ridge Parkway curves around a mountain above the upper end of its valley. There is even a pull-off so that tourists may park their cars and view the panorama at leisure. But few cars stop. Evidently, it's just another hazy, green gorge and by the time a vacationing family has traveled a couple of hundred miles of Parkway they are sick of pretty scenery anyway.

Yet despite its easy access and close proximity to a major recreational highway, Big Timber Creek remains lost to all but a few. Fortunately, it lacks the kind of epic grandeur—towering mountain peaks, misty waterfalls, sheer cliffs of oblivion, etc.—that attracts people in hordes. So, curiously, whatever it

might lack in geological scale it gains in green seclusion.

When I go in for trout, I prefer to walk in, following a switchback trail that leads in some four miles below the one access road. It's become a kind of prelude, this trek down the ridge, and I enjoy the building anticipation in hearing the faint roar of water grow louder as the trail descends, constantly turning back on itself as it winds through tunnels of overhanging laurel and across mushy spring pools and in and out of timbered hollows. Because of the dense timber, you're upon the stream suddenly. It's not large, but open enough for pleasurable fly casting.

When I hit the stream, I always head up (an instinct as normal to anglers as salmon) and walk half a mile to a spot where the stream splits around a grassy island and riffles, in two channels, into a wide pool. It's beautiful water—a green glide of smooth current down either side and a submerged bar of pebbles and sand in the middle. It is also forgiving water, a good place to cast out the hindering anticipation that is chronic in the first few minutes of fishing. For if a trout doesn't take in the near run, it's a simple matter to lay a line across the bar and fish the opposite run. Usually, one or the other will produce a fish.

This particular day is no exception. After dousing my fly, a #18 Adams, I work line into the air with a quick series of false casts, then shoot a long curl upstream into the near run of current. Before the fly can ride a yard, it's taken in a quick slurp and a fat rainbow, a nine incher with scarlet-pink sides, bores against the rod. After netting him, I release him, though not purely out of sporting conscience. For Big Timber Creek, like many North Carolina streams, is under special state management which allows only larger trout to be taken. The entire length of Big Timber is under this management as well as its tributary brooks. Not surprisingly, it is alive with trout. Browns predominate, but there are also rainbows and, in the highest headwaters, brook trout or "speckles" as the mountain people call them.

Moving upstream, I come to a long narrow run which sweeps in tight against the laureled bank. It is deeply shaded and I can see feeding activity. Wading in very slowly, I make one exploratory cast. Nothing.

So I strip in line and wait, studying the water for a possible clue. Up and down the trout are dimpling the surface with their rings, but I can see no insects. Midges, I suspect, and dig in my vest for a one pound test tippet.

Unlike eastern waters, there is comparatively little aquatic insect life on a southern Appalachian stream. The trout, for the most part, feed on various terrestrial insects and assorted stream food—minnows, crayfish, snails and salamanders. Consequently, fly selection is seldom a fussy matter. But not so now and after tying on the platinum fine tippet, I open my midge box. Through the acetate lids covering the different compartments, I see several dozen flies in sizes 20 to 24. Scarcely larger than dust motes, they're marvels of fly tying art. I select a #22 Quill Gordon and after a painstaking half blood knot begin false casting.

When I can feel the curl of line pulling in the air, I take a careful step forward for better positioning. But it's a mistake. For no sooner have I lifted my foot than a trout shoots off, only ten feet from me, and churns directly up the run leaving a V-shaped wake. The feeding stops. Now there's nothing to do but wait. I light a cigarette (very carefully) and smoke it down before the first rise appears again. Feeling too eager, I decide to give the trout some more time, knowing that one more such performance will put them down for good.

Then, to my surprise and horror, I see another trout, this one scarcely six feet from my boot. I know he's seen me because he's holding perfectly still in the shallow current. It's like when the bird sees the stalking cat and the cat knows he's been seen and they play a game of psych-out. Only it's me and the trout. So I stand motionless, fearful that the slightest move on my part will launch him on a panic dash up the run. He's a nice brown, perhaps 13 inches, and I can see his every spot and the quiverous spread of his fins—beautiful but a bother. Then, get this, he eases upstream to a rock a few feet away, turns on his side and wiggles under the rock. I was dumbstruck. I knew trout had the uncanny ability to hide in a trickle of water. But half eel?

With the pool crier out of my way I start to work out line. When twenty feet is in the air I lay it on the water. Even at that distance the tiny fly is invisible. I will have to react to any rise in the general vicinity of my tippet. But no strike. So I pick up the line, lengthen it in the air and lay it back down half a dozen feet upstream. I keep doing this until I'm forty feet out, about the limit I'm willing to go for fear of hanging on my backcast. And still no strike, though the trout continue to rise. Fortunately my casting has not put them down.

The tension builds and I go from the gray Quill Gordon to a gray-brown Adams and then to a brown Dark Cahill, repeating the casting cycle with each. And each fly fails to draw a rise. Finally, my one pound tippet whittled to a few inches, I tie on a cream colored Light Cahill. My first cast draws a rise, but I miss. Quickly, before my concentration breaks, I roll the line back out, make two savage false casts to lengthen it and shoot for the head of the run. My line is on the water for a second or two when there is a dimple above it. Gently, I raise the rod and feel the sharp, delicious surge of a hooked trout.

Because of my light tippet, it's ten minutes before he lies curled in the net, a brown of about 15 inches, his heavy sides measled with pea sized red and black spots. Not a trophy, but no matter. I release him in a gentle current and watch him hold over the pebbly bottom, gathering strength with each pump of his gills. Finally, he moves away.

I change to a larger pattern and fish casually, eventually coming to a tight, deep pool of fast water where there is a large, block like rock jutting from the bank. It is perfect to sit on and deciding I need a break, I do. Here, the rhododendron and alders spread over the stream and though it's nearly noon, the sun does not blaze, but filters through their foliage in soft splinters of yellow light. I lay my rod on the rock and light a cigarette, feeling satisfied.

Almost at my feet, a small rainbow flashes up for a bug and disappears into the deep current. I watch for him or another, but no trout shows and I'm left studying the myriad whorls of current which race through the run. They change colors as the weak sunlight refracts through—deep blue then green then sunlight-brown and back to blue with the flickering quickness of a strobe light. It's mesmeric, psychedelic even and I have to look away into the shaded forest to refocus my eyes.

But then, like the elusive depth of turbulent water, the blue gloom of the alder jungle becomes infectious, transfixing and random, past images experienced on Big Timber Creek begin to leap out—the eerily human print of a bear track in sand; spring snow sifting through the laurel; a silent rattler coiling back on himself; a puzzled doe snorting for my scent.

I look around at the woods and water and rocks, knowing I'm not in wilderness but nevertheless awed at the intimation of wildness. This intimation, a feeling so deep and elusive it can only be absorbed as the rattler absorbs the weak sunlight that filters through the forest canopy: with unblinking eyes. And for a moment I feel that this, here and now, this is the way it was when the continent was green. Back when. ⬍⬍

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Last Reminder

July 31 marked the expiration date of N. C. Combination Hunting and Fishing Licenses and Hunting Licenses. State Fishing licenses are valid through December 31. Act accordingly, please.

Sportsman's License Available

Before you purchase your new Combination Hunting and Fishing License, consider the new $25.00 Sportsman's License. This one convenient license covers statewide hunting for both small and big game, statewide fishing including mountain trout, primitive weapons hunting (bow and arrow and muzzle loaders), and hunting and fishing on the Game Lands. It is good from August 1, 1975 until July 31, 1976.

Your Chance to be Heard

Public hearings on proposed changes in the 1976 Inland Fishing Regulations are scheduled as follows:

September 29	Asheville	Buncombe County Courthouse	7:30 p.m.
October 1	Salisbury	Rowan County Courthouse	7:30 p.m.
October 2	New Bern	Craven County Courthouse	7:30 p.m.

Your attendance and comments are welcomed.

Peak Boating Season

From now through Labor Day marks the annual boating season peak. Tarheel water ways will be utilized to capacity, and this means care on the part of everybody. If you are a boater, watch out for your fellow boaters and swimmers; if you are a swimmer, don't make more problems for the boater. Water skiers and fishermen should be extra considerate of the other.

Boating Skills and Seamanship Class

Flotilla 9-11, Cary, of the U. S. Coast Guard Auxiliary is conducting a six-lesson course with the above title. It begins September 9 at 7:30 p.m. at the Ragland Building on the St. Mary's College Campus in Raleigh. A $5.00 fee will be charged for textbook and materials.

Dove Season and Marsh Hen Seasons

The following hunting seasons were selected by the Wildlife Commission at its July meeting: Doves — September 1 to October 11, and December 13 to January 10. Rails and gallinules — September 1 to November 8. Waterfowl seasons will be announced at a later date.

TIMBER RATTLER

by John Crew

COLOR PHOTOS BY JOHN CREW

• **Crotalus horridus horridus** is a vivid and impressive title. It is the scientific name of the timber rattlesnake, one of six species of venomous serpents that live within the borders of North Carolina. This snake belongs to the family Viperidae which includes all New World pit vipers, and the sub-family Crotalinae which includes all North American dangerous snakes, except the coral snake. It is further classified in the genus **Crotalus** which identifies it as a rattlesnake.

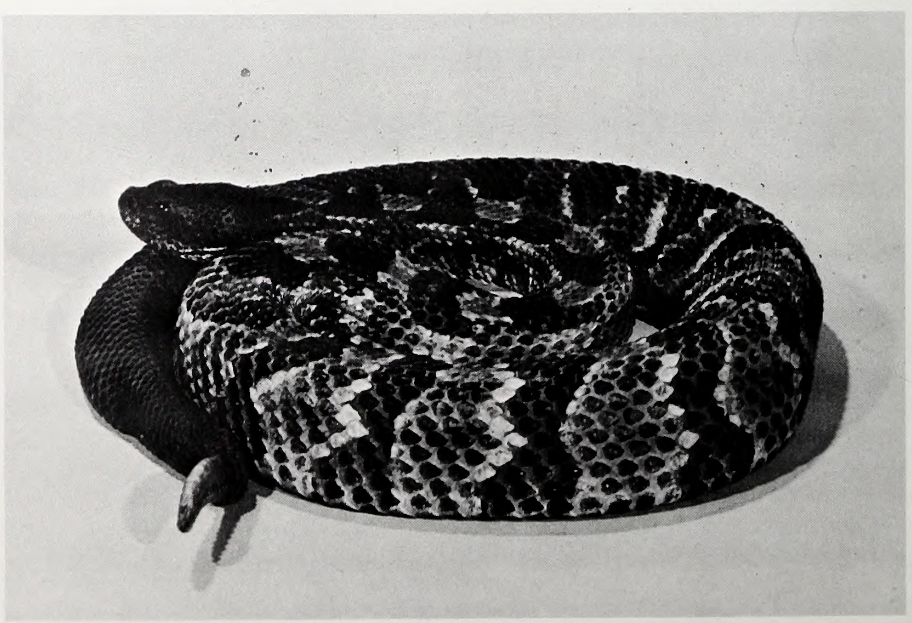
In North Carolina, the timber rattlesnake's normal range is limited to the mountain areas. This range occasionally overlaps that of the canebrake rattlesnake; however, the eastern diamondback rattlesnake and the timber rattlesnake inhabit separate ranges in North Carolina. The timber rattler, as the name implies, is a serpent of timbered and rocky terrain and is frequently found in second growth areas. There are two common phases: the yellow, pictured here and sometimes called the "velvet-tailed" or "banded" rattler, and the dark or black phase. Herpetologists agree that both the black and yellow specimens are simply color phases and not separate species.

This snake ranges in adult length from about 36 inches to 50 to 60 inches and averages, in North Carolina, less than 48 inches. The record for this species in North Carolina is about 67 inches. Size is in part dependent on food supply, climatic conditions, and other variables and is no real indication of age. Similarly the number of rattles or buttons is not necessarily a valid indication of age. Popular myths explain that each year a rattler adds a new rattle.

This is based, in part at least, on fact. With every skin shedding (which is usually an annual event) a new button is added and the segments become increasingly larger until the snake reaches adult size. After reaching adult size, two to four new rattle segments are normally added each year. However, the segments may be lost through wear or breakage of the fragile rattle section.

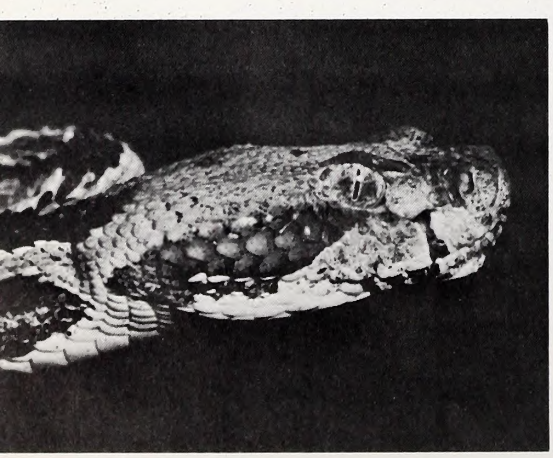
Despite a sinister reputation, timber rattlesnakes are actually rather timid and secretive creatures and are beneficial to man in that their diet is composed of rodents such as rats and mice, and may include frogs, birds, lizards and even other snakes.

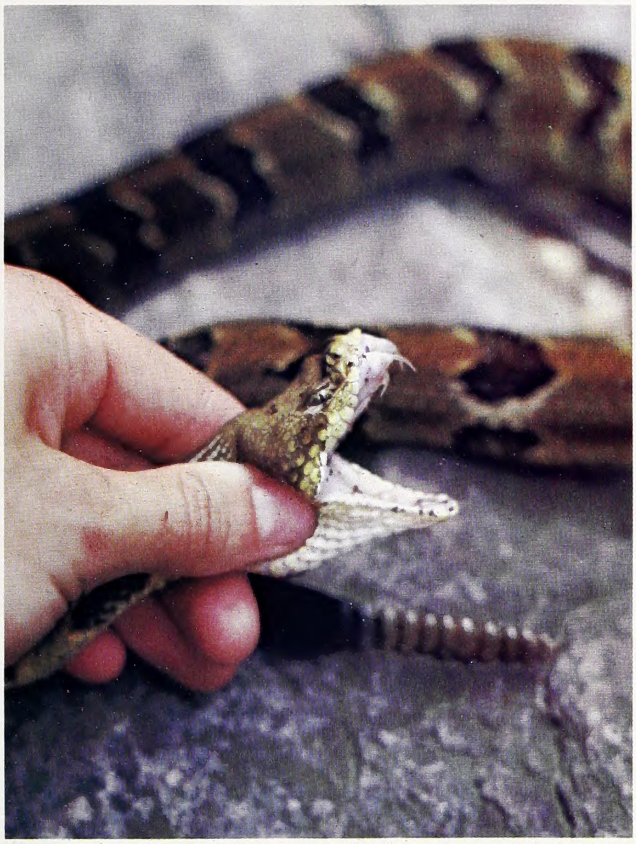
PHOTO BY JOEL ARRINGTON



If you're close enough to distinguish the eliptical pupil in the rattlesnake's eye, you're too close! The timber rattlersnake comes in several color phases, including dark one shown at right.

PHOTO BY JACK DERMID





The handling of live poisonous snakes isn't for you. Even the "experts" don't do it any more often than necessary, and then only with extreme care.

The timber rattler has often been labeled as a villainous and evil serpent. This stems in part from an uninformed public and perhaps in part from the snake's habit of congregating in dens to hibernate. Such dens, which frequently contain several dozen rattlers, sometime include copperheads and even nonpoisonous snakes. Dens are usually located in or near wooded, rocky ledges with a southern exposure where the rattlers can often be seen sunning themselves in autumn and spring. In the summer horridus scatters over the countryside but returns again to the den in the fall to hibernate.

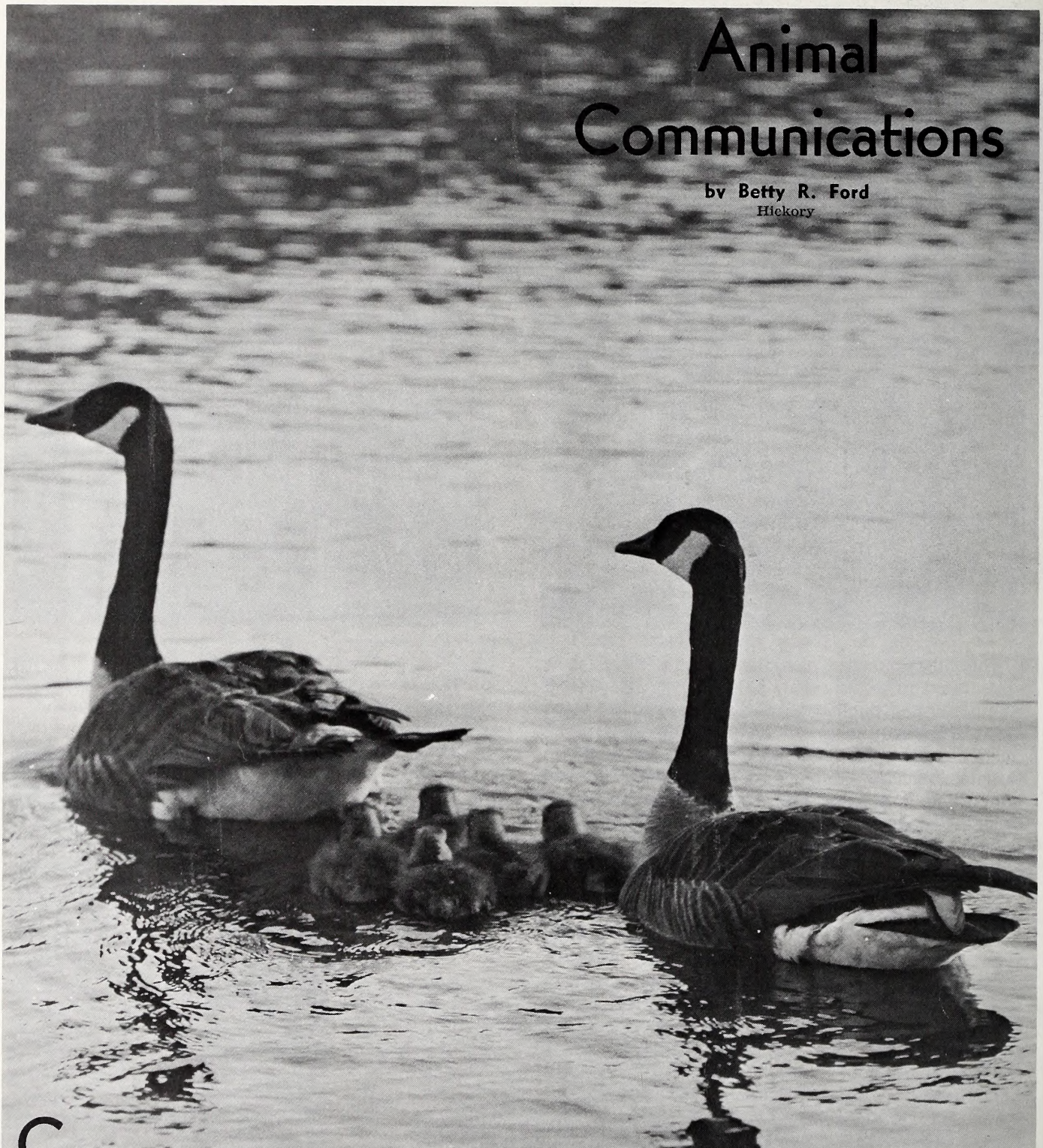
Timber rattlers do pose a potential threat to man where both live in the same area; however, needlessly killing a timber rattler, or any venomous serpent when encountered in a remote or wilderness area is totally unnecessary. A traveler in timber rattler territory can prevent any serious man-snake conflicts by wearing protective clothing, by carefully avoiding likely habitats and by watching where he places his hands and feet. If an encounter is made, a cautious retreat is the best course of action. Unless provoked or surprised the timber rattler will usually try to escape and avoid contact with man.

The N. C. Medical Journal, Volume 25, No. 3 (March 1964) has a very informative article on snakebites. It is **Poisonous Snakebites in North Carolina** by Henry Parrish and is an excellent analysis of all reported bites over a 10-year period from 1950 to 1960.

Caution: Do not attempt to handle or capture venomous snakes unless you are an experienced snake collector and are prepared to suffer the serious consequences of a snakebite. ⬍⬍

Animal Communications

by Betty R. Ford
Hickory



COMMUNICATION is essential among animals. They use it to convey information about basic life processes—breeding, fear, hunger, danger, anger, pain. The physical senses of sight, sound and touch and the chemical senses of smell and taste are all used by animals to communicate.

Most land mammals have eyes with focusing lens and a larynx which serves as a sound box in vocalizations. They have three bones in the middle ear and external ears. Many have muscles that can raise or turn the ears to pick up and find the sound direction.

Wild animals must live in a place where they are assured they can feed and reproduce in safety. Through communication they are able to ascertain this information from other animals. Sounds and other signals are primarily for use within a species, but often alarm or danger signals or territorial displays affect other species—usually when they share the same breeding or feeding area. The alarm squeal of a rabbit brings fox, coyotes and sometimes deer running to the sound.

Distress calls in mammals often sound similar. Danger to one group may be danger to other groups of similar size. Normally quiet rabbits sometimes scream when in pain or severe danger. The distress cries of rats and mice are ultrasonic—pitched too high for human ears. A frightened fawn sounds like the

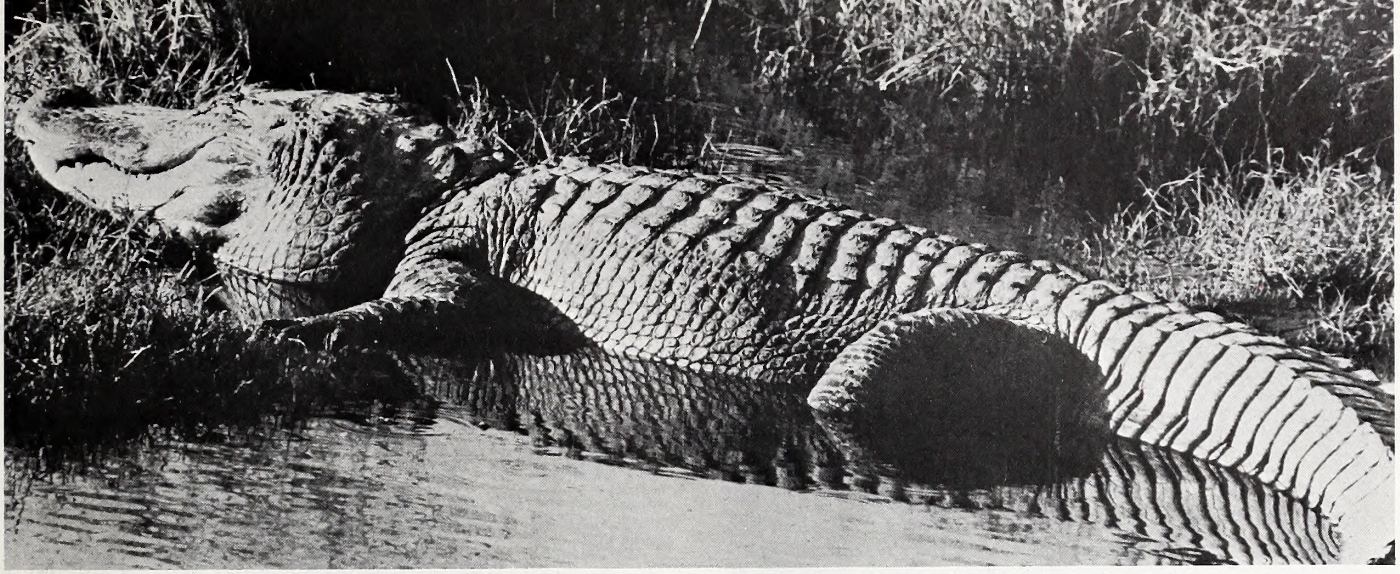


PHOTO BY STEVE PRICE

Communications in animals include various sounds, odors, gestures, and perhaps some things that we still don't fully realize. This bull alligator is a man of few words; but you better pay attention to every one of them!

bleat of a lamb. Baby raccoons often climb too high in trees and unable to get down, squeal for their mothers for help. They have a child-like scream when in pain.

In addition to vocalizing, mammals use a number of other alarm signs. The porcupine accentuates its grumbled warnings by clicking its teeth as do woodchucks. Wood rats rattle their tails, rabbits thump with their feet.

The white-tailed deer, upon encountering danger, turns and flashes the pure white underside of its 12" tail as a signal to the herd. The deer use body positions, head movements, ear twitching, and flicking tail, in communication. Often, in danger, the tail-flasher also gives a little bleat.

The buck, in mid-autumn, becomes the sentinel. He uses whistles, woofing sounds and tail flashes to warn his doe of danger or another buck.

The opossum is well known for the visual signal of immobility. In danger, this animal may lie on its side limply, feigning death, eyes closed, heartbeat slowed and tongue lolling out of its mouth. It may permit handling in this state or may bite.

The skunk always gives fair warning to enemies by arching its back and opening its mouth in a threatening manner. Persistence is met with a lowered head, growling and a fixed direct stare. The skunk then stamps on the ground with its forefeet or rakes at the grass with its long claws. At last resort, it will raise its tail over its back, turn its body sideways in a U shape and discharge the scent, usually in a fine spray, so accurately that it reaches an enemy's eyes at distances of up to eight feet. This spray can cause nausea and vomiting and burn the eyes, causing temporary blindness.

Young animals react differently to danger signals. Fawns freeze instead of running from danger. They flatten themselves against the ground so that their spotted coats blend with the dappled pattern of sunlight through the underbrush. Young reactions to danger are usually taught by the parents.

A female skunk uses both visual and auditory signals to keep her youngsters in line. At the hint of danger, the mother points her nose in the direction of the trouble and becomes rigid. The offsprings immediately imitate her. If she wishes to hide, she makes soft, twittering noises as she disappears. When the danger is gone, the female churrs and twitters to her young.

Each form of animal communication has its drawbacks. Odors persist and disperse over a wide area and are poor indications of direction. Visual signals require the sender to be in range of predators. Touch and taste require close contact. Auditory signals are affected by wind, storms and other noises. Some animals use combined signals to communicate.

Survival of the best of each species is determined by their discretion of the use of communication. Every time an animal uses his signals, whether vocal or visual, he risks the danger of being observed by a predator. Most wild animals will run from an enemy. Only if cornered will they change their tactics and turn to fight.

Nocturnal animals, such as the mole, depend mostly on smell and touch.

Sound is used by land mammals for communications over a distance. If used at close range, it is usually accompanied by a combination of other signals.

Sounds that accompany aggressive or threatening action are not required to carry much distance and are generally low-pitched. Raccoons growl and raise their tails and their body hairs like a dog when trying to intimidate each other. Bears growl in anger and threat. When a bear emits a coughing sound, he is about to attack a foe. The ferocious-sounding cough can also bluff a lesser bear into running.

Most members of the cat family employ growls and hisses, accompanied usually by arching the back and erection of the hair on the tail and body. They also spit and snarl in anger.

Squirrels disagreeing among themselves, chatter and make chirring noises over territorial rights. They vary the intensity of the signal to indicate the type of danger. A bird of prey causes an abrupt, loud Cheesk, then the squirrel takes cover. Other squirrels join the alarm. A snake is handled differently. The squirrel approaches it slowly, stops and flicks its tail vigorously from side to side and emits a peculiar vibrating chirp,

RUDY POPELAS

Each animal species has its own "language," but some expressions, such as danger, often are recognized by other species. The sudden barking of a squirrel may alert nearby birds and even deer.

that begins on a loud sharp note, followed by a series of lower-pitched notes.

Animals also use sounds in training their young which the offsprings imitate.

Animal language is entirely different from man's. To our knowledge, communication in land mammals consists mostly of simple information. It is used only to convey these messages and is not used idly to "talk."

Mammals usually rely on odors for sexual attraction and identification but some use sound. The cat family is probably best known for this. The screams of cats at night when they call for a mate have been heard by all. The small shrew uses a clicking sound to attract a mate.

Scent is used to locate food, detect enemies, making and defending territorial boundaries, and for attracting a mate for breeding. Scent glands produce an odor which may attract others of its species or a repellant to an intruder or predator.

The skunk is best known for his power of chemical signals. They use their defensive mechanism only if absolutely necessary for their safety, and never in fighting among themselves.

Mammals sniff the droppings of other mammals, especially their own species. From these, an animal learns something about the size and sex of the producer and about what food is available in the area.

In the early fall, buck deer make a scent pit or wallow. The buck leaves his scent in the pit by depositing urine and secretions from his scent glands. A passing female is attracted to the area and hopefully she will be induced to stay. The wallow also serves to drive away a potential challenger.

Beavers mark hillocks of mud or projecting objects that are their signposts with secretions from their musk glands.

Bears mark trees by sticking some of their body hairs to the tree with mud. First, the mud is smeared on the tree, then the bear scrapes his back several times against the muddy spot, so that the rough tree bark pulls out a few hairs. This mark carries the body smell of the bear and probably tells about its size and sex to another bear. A female may elect to stay in this area, another male may wish to move to an unmarked territory.

In another kind of bear sign language, the bear stands on his hind legs to reach up on a tree and make deep scratches with his teeth and claws in the bark. The next bear tries to reach higher up the tree. If he fails, he will move on quietly without a fight.

When animals live in herds or groups, species are recognized by scent, by sight or a combination of the two.

Different attitudes of the head, ears and tail have definite meanings. Many of which are associated with the rank of the individual in their social order or with agonistic behavior—aggressive and defensive fighting, escape attempts and submission.

Courtship in land mammals is strongly tactile and visual.

Deer form herds only during rutting season. Males fight for dominance and to induce females to gather around for mating.

Male hares in spring have bloody battles. Ears laid back, they box with front paws while the claws on the hind feet make deep cuts.

Much bluffing is inherent in pre-fighting. The animals will circle one another, sniffing and testing the other. The animal that decides to submit without fighting usually offers a vulnerable part of his body to the victor—often the exposed throat. When the winner is sure of his victory, he will leave the loser who runs away.

Deer, like horses, lick, nuzzle, rub necks or butt heads in the courtship rituals and outside it. Many members of the cat family nuzzle one another and rub each other's head, neck and body slowly.

The bat uses sonar—echo location—in his unique form of communication. In migrating and flights, the bat utters sounds of high frequency that cannot be heard by humans. These sounds are uttered until they bounce off an object and are bounced back to the bat's mouth and ears. The echoes form a picture in the bat's brain. Buzzing and clicking noises are used along with the sonar. He also locates prey with this device. The echo tells where the victim is, how big it is, whether it is moving and how fast, even its shape and texture.

Most of the study of communication is limited to insects, such as bees and ants, and the more intelligent apes and dolphins. All of which can be studied in a controlled environment. Land mammals are difficult to study because they are either nocturnal, secretive or nomadic. They must be observed in the fields for they have no normal patterns in captivity. Their excellent sight, smell and hearing make it difficult to study them at close range. Some of the land mammals are small and hard to detect. Mice and shrews may go undetected only a few feet away from the observer.

We know that animals must communicate to survive. When two mammals of the same species pass each other, there must be some signal for them to know whether they are male or female, and whether they are ready for breeding. Signals are just as essential for finding food. For one animal to convey to the others the location and type of food, there also must be communication. ▲▼

Robeson County Cat Hooks

by Harvey Burgess
Editor, The Lumberton Post

A truly unique experience.

What else can you call the time-worn Robeson County tradition of "settin' cat hooks?" For the uneducated, that means attaching little individual 'trot lines' to everything in the swamp that doesn't move —and some that do—such as cypress trunks, logs, sticks, snakes' tongues, turtles' backs, alligators' hides, and sometimes your own foot.

It took very little coaxing to dislodge this avid angler to give the "cattin' " a whirl. In fact, I was the one doing the prodding.

So, one Friday afternoon late, we loaded up—me, friend Bill Phillips, a couple of diced pork chops, three 'cards' of trot lines, twelve spiders, numerous mosquitoes, a piece of a fifth of Henry McKenna, and a partridge in a pear tree—with boat jammed in the rear of Bill's immortal Ford Falcon wagon and off to the Burnt Islands we went.

Before this tale goes any farther, let's take time out to discuss the attributes of that particular brand of craft known as a 'Robeson County swamp boat' . . .

There. Now let's talk about the drawbacks. It's the kind of boat that, if you could take one breath from one lung, you'd capsize; or if you'd bend forward to scratch your knee, you'd grab the bottom of the swamp before you ever got to your knee. I decided that the reason Robeson folk can pilot them so well is because they don't breathe. Take note, Guinness Book of World Records!

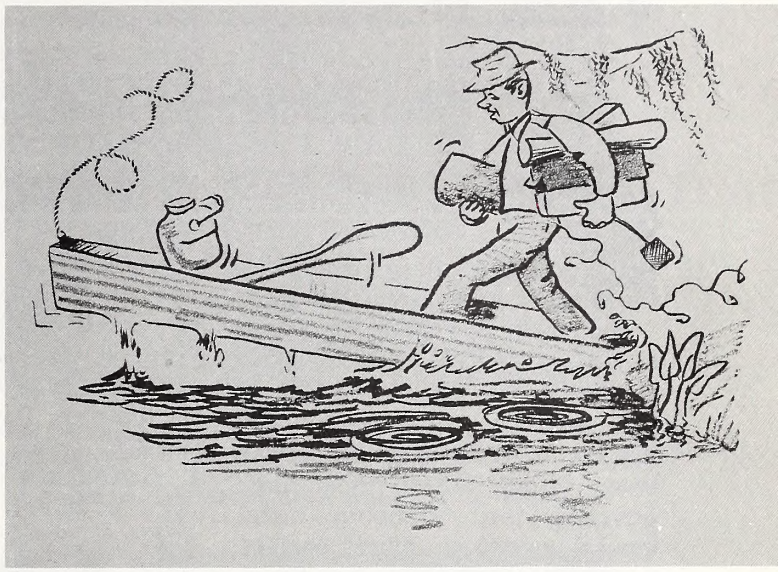
Anyway, as we pulled up to the branch where we were to launch, the sun was beaming down in our faces, laughing at me. We lugged the paraphernalia down to the bank. I made the mistake of asking Bill if where we were at was part of the river. When he stopped laughing, he told me it was called 'Tom's Lake.' We weren't anywhere near the river.

Score: Bill & Swamp—1, Burgess & Ignorance, 0.

We slid the boat into the deep black water, loaded everything in it, and Bill easily strode to the other end of the vessel. When I got on, the boat decided it didn't want me, so I started something I have come to call the 'Burnt Swamp Ballet,' with the boat swaying gently one way and me coarsely the other.

After a few stanzas, I had convinced the boat I was too stubborn to get out, so it took on a few gallons of water to compensate and let me in, probably for fear of drowning.

Once seated, I was afraid to move, and Bill informed me I had to get the other paddle out and



The Robeson County swamp boat is referred to by many names—none very complimentary. Coming aboard like this (above) usually gets you a pre-voyage bath.

push us off. It took an inch of Henry McKenna for me to do that, and a little of my courage stayed on the bank as the boat drifted into the middle of Tom's Lake, and I realized I was to sit tight or be some gator's evening snack.

A few strokes of Bill's paddle through the black murk some call water and the boat glided under the bridge. I started humming to myself to regain what I had left on the shore, and when I glanced down and saw that the top edge of the boat was something like an inch above the water, broke into a vocal rendition of "Nearer My God to Thee."

All seemed fine while we were in the main channel. My back was to Bill, and I felt like one of those wooden maidens on the prow of a pirate clipper—the first to get shot in a battle and the one to eat bugs in the summer.

Courage built within me like a mason laying a wall with one arm, and I got brave enough to start baiting the hooks, but not brave enough to turn around and hand them to Bill. I just reached behind and hoped that it was him taking them and not Godzilla.

Just when I was getting the feel of it all, I noticed that the boat was turning in the direction of the SWAMP ITSELF! Fingers of fear reached into my throat, but my mouth couldn't move, because two eight-pound mosquitoes were busy lacing it up with 10-pound test spider webbing.

Unable to voice my protest, into the hanging gardens of Hades we went, and I could have sworn I saw a snake grinning from one branch. His buddy was probably shouting "Hey, Oscar, we've got a live one coming in!" in snake-language.

It got harder to bait the hooks, because I was trying to keep my fingers crossed at the same time.

Slicing between cypress trunks and willowy limbs and vines, I began wondering if God was watching

• **continued on page 27**

4 a.m. Is For The Birds

IT is exactly 4:45 a.m. by the clock on the nightside table —3:45 a.m., actually, Eastern Daylight Time. It's early August.

But in the wee dawn hours, quietness does not prevail. Oil tankers are warming up across town, setting off on their runs, prodding their stubborn metal mounts with their diesel engines to greater speed to pull their heavy cargoes.

It is still pitch dark outside. But as sleepy eyes accustom themselves to the darkness, there seems to be a hint of lightening in the sky.

The diesel is now in full power, roaring across town. A train wails at a crossing. The light of the bedside lamp shows the time is now 4:54 a.m. The diesel fades into the distance, and the cry of the freight train has subsided. Now one hears only its cars clacking on far-off tracks.

5 a.m. A dog barks plaintively. His is a lonely sound. In the dark sky, a maverick streak of heat lightning flashes. As it fades, shadows cast by a street light reappear.

5:02 a.m. Right on schedule . . . the first bird call, its clear, pure notes piercing the morning calm. The wood thrush, and the lusty song of this one will startle anyone seeing its size, which easily rivals that of a plump sparrow. This morning, this one is some distance away, on some other woodland lot.

5:05 a.m.—The canine population is apparently awakening in full force. More barking can be heard across town, occasionally joined by that in the neighborhood close by. Skies are still dark, and in the west a brilliant star shines brightly through the branches of a maple in full leaf just outside the window. The street lamp still casts shadows, but there is a pinkening in the east. Dawn is definitely on its way.

5:10 a.m.—The woods thrush song is fainter. Perhaps it is testing for happier hunting grounds. Other tenants of the trees apparently are still dozing. At this moment, the only sounds are those of a cicada who sounds a bit sleepy, and, sporadically, a tree frog trills.

5:16 a.m.—Right on schedule. The sound I've been listening for —the whip-poor-will bidding farewell to the night. His rippling cry comes from a distance as he begins winging his way homeward.

5:20 a.m.—A moth beats its fragile wings against the window. All is quiet, and then the silence is broken harshly. The whip-poor-will is just outside. His raucous song after his nocturnal prowls can't help but waken all the tenants of the trees.

5:25 a.m.—His serenade apparently over, the whip-poor-will is heard on a more distant woodland plot. Still winging his way home . . . and looking for breakfast en route?

5:26 a.m.—Dawn is breaking, but there are no new bird sounds. And no signs of the mockingbird family who has used the street light at times in their forage for food. I have seen them as early as 5 a.m. A thought dawns. It is early August, and on June 21 day began breaking later each day. And birds make their schedules by light. It takes only two or three weeks to plainly show this.

5:30 a.m.—A cardinal tweets faintly. The wood thrush is silent. Where are the pairs of mourning doves, Mr. and Mrs. Towhee, the redheaded woodpeckers, families of bob-whites, nuthatches and finches, the speckled thrashers, blackbirds and grackles, the saucy bluejays?

5:35 a.m.—A mockingbird joins the cardinal's song. A rooster crows in another part of town. Dogs continue to herald the new day. The hoarse cry of one brings Fritz the Shepherd bounding to his feet, black ears alert. The tree frog croaks, and the cardinal has winged closer. A woods thrasher joins them in song.

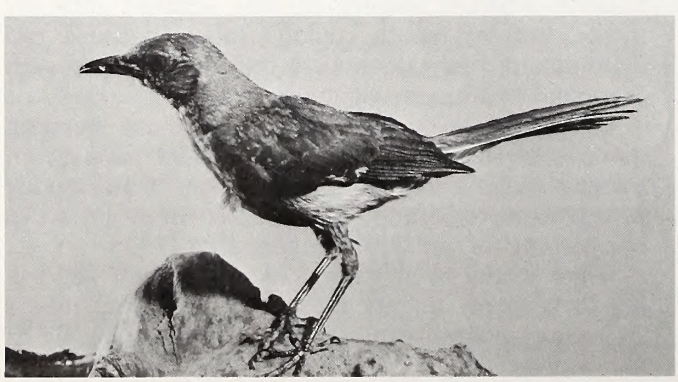
5:37 a.m.—The mocker and the cardinal are in full song, and a bluejay tries to join in with raucous notes. The bird bath and feeder, bathed in the grayness of dawn, are not inhabited.

5:40 a.m.—Fritz has breakfast, and Baby the cat comes in from a night of prowling for his. He is followed by scolding birds, who want this nemesis out of sight.

6 a.m.—The bird bath is alive with motion. Squirrels have joined the action there, and scamper among the birds gathering.

The first golden rays of sunrise slant through trees, bathing all in an amber glow. Another summer day is born. How will we use it?

Louise Lamica



TO A MOCKINGBIRD AT THREE A.M.

Listen here, you loudmouthed mocker,
Singing, as if off your rocker,
Every night for this past week
Eine Grosse Nachtmusik;
We have heard ten times or more
Your entire repertoire:
Ariettas, songs, and catches,
Canzonettas, glees, and snatches.
Peace! Be silent! Not one peep!
All of us could use some sleep.

Paul Koepke

Hunter Safety For the Deaf

The North Carolina School for the Deaf completed an original course on gun and hunter safety last fall by graduating 58 of 73 students who participated. There were 18 girls in the graduating group of 58.

The first of its kind in the nation, the project was carried out through local interagency cooperation. Groups participating included the Agriculture Extension Service (4-H), Western Piedmont Community College, N. C. Wildlife Commission, Morganton Police Department, and the Valdese Police Department.

Paul Boynton, NCSD community education coordinator, termed the course "a community effort" that has "never been done before." He said the idea has really "grabbed ahold" and that the deaf school in Raleigh is planning a similar project. Reagan Ammons, associate 4-H agent, said he hopes the success will lead to more courses at NCSD by 4-H.

Boynton said NCSD is planning to start classes on skiing and for a wilderness club.

All the students had six hours of classroom instruction. They had to pass the N. C. Wildlife Commission test on gun and hunter safety.

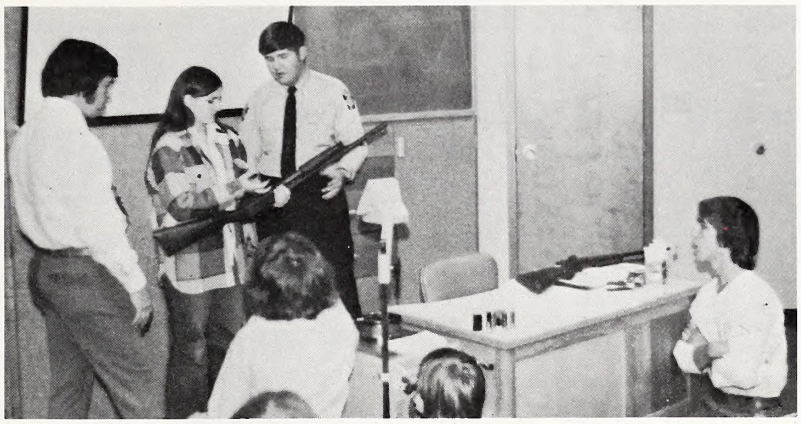
Some of the students went to the WPCC firing range, shooting .22 rifles and 12-gauge shotguns. Although this was not required for completion of the course, the instructors recommend the experience.

The course administered under the Wildlife Resources Commission is the same course taken by hearing persons. Several states require successful completion of similar courses before a hunting license is issued.

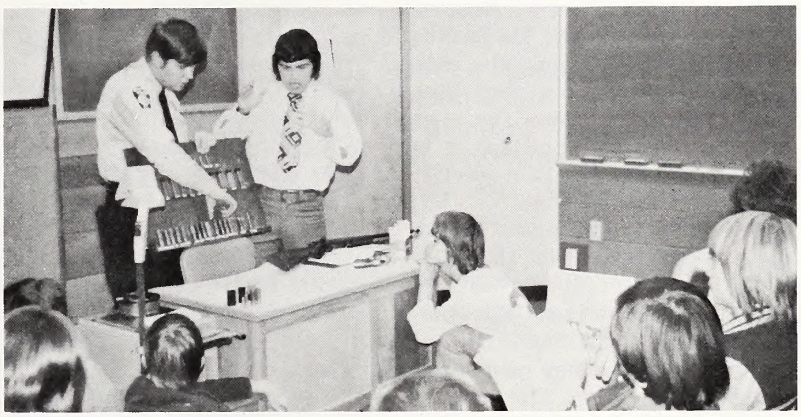
Instructors received prior training by the Wildlife Commission. Serving as instructors were Joe Harrington of the Morganton Police Department and Deputy Sam Williams of the Burke County Sheriff's office and Steve Hoyle from the Valdese Police Department. They were certified as instructors by Lyle Morgan, hunter safety officer with the Wildlife Commission.

Interpreters for the instructors were NCSD teachers David Heavner and Bill Hastings and Ethel McGeen, parent of a deaf child. Jeff Lackey, 4-H member, served as an assistant.

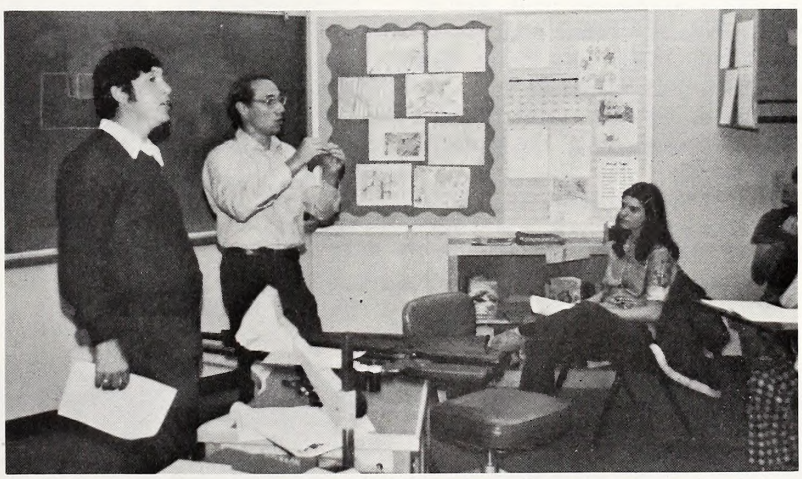
Students who successfully completed the course were awarded a certificate of achievement from 4-H, a Wildlife Commission hunter safety patch and a certificate of completion.



Steve Hoyle, Valdese Police Dept. (right, standing) and Bill Hastings, interpreter, N. C. School for the Deaf, explain the fine points of loading a shotgun. Below, they display and discuss various ammunition types and the uses each has.



The course contained all the points of safe gun handling, and some of the students participated in actual firing range practice. Below, Sam Williams, (left) of the Burke Co. Sheriff's Dept. conducts a question and answer session with the help of interpreter David Heavner.



- Letters
- Comments
- This & That

BACK OF THE BOOK

• This is the contents of a letter written in 1855 by Chief Sealth of the Duwamish Indians to the President of the United States, Franklin Pierce.

"We know that the white man does not understand our ways. One portion of the land is the same to him as the next, for he is a stranger who comes in the night and takes from the land whatever he needs. The earth is not his brother, but his enemy, and when he conquers it, he moves on. He leaves his father's graves, and his children's birthright is forgotten. The sight of your cities pains the eyes of the red man. But perhaps it is because the red man is a savage and does not understand.

"There is no quiet place in the white man's cities. No place to hear the leaves of spring or the rustle of insect's wings. But perhaps I am a savage and do not understand, the clatter seems to only insult the ears. The Indian prefers the soft sound of the wind darting over the face of the pond, and the smell of the wind itself cleansed by a mid-day rain or scented with a pinon pine. The air is precious to the red man. For all things share the same breath—the beasts, the trees, the man. The white man does not seem to notice the air he breaths. Like a man dying for many days, he is numb to the stench.

"What is man without the beasts? If all the beasts were gone, men would die from great loneliness of spirit, for whatever happens to the beast also happens to man. All things are connected. Whatever befalls the earth befalls the sons of the earth.

"It matters little where we pass the rest of our days; they are not many. A few more hours, a few more winters, and none of the children of the great tribes that once lived on this earth, or that roamed in small bands in the woods, will be left to mourn the graves of a people once as powerful and hopeful as yours.

"The whites too shall pass—perhaps sooner than other tribes. Continue to contaminate your bed, and you will one night suffocate in your own waste. When the buffalo are all slaughtered, the wild horses all tamed, the secret corners of the forest heavy with the scent of many men, and the view of the ripe hills blotted by talking wires, where is the thicket? Gone. Where is the eagle? Gone. And what is it to say good-bye to the swift and the hunt, the end of living and beginning of survival? We might understand if we knew what it was that the white man dreams, what hopes he describes to his children on the long winter nights, what visions he burns into their minds, so they will wish for tomorrow. But we are savages. The white man's dreams are hidden from us." And now, 120 years later, what are "the white man's dreams?"

W. L. Hamnett

PHOTO BY TED DOSSETT

National Hunting & Fishing Day September 27, 1975

NHF DAY PLANNING IS EASIER WITH NEW 50-PIECE AIDS KIT

by Bob Delfay

Sportsmen's clubs and conservation groups planning National Hunting and Fishing Day activities for Sept. 27 will find their organizational efforts much easier and more successful with the help of the new NHF Day aids kit.

The comprehensive aids package includes 50 separate items to help make the job of organizing an NHF Day observance a little easier. These professionally prepared materials include sample press releases, sample radio announcements, sample advertisements, posters, bumper stickers, signs, invitations, stickers and—above all—instructions on how to use all these materials to maximum advantage. Even the least promotion-oriented sportsman can organize his NHF Day program like a pro with the aid of this packet.

In nearly all cases, NHF Day activities are organized by volunteers on a part-time basis, and there is little time to write releases, draft proclamations, design posters, etc. With this new aids packet, it is all done beforehand by by NHF Day headquarters.

Clubs obtaining the kit will also receive information on how to order additional quantities of all NHF Day promotional materials at reduced prices.

NHF Day is not far off, and clubs are urged to order their kits as soon as possible. All orders are shipped same day received. The kits are available for $3.00 from National Hunting and Fishing Day, 1075 Post Road, Riverside, Connecticut 06878.

• DON'TS from page 11

DON'T

Ski in shallow water or where you do not know the depth—minimum safe depth is five feet for adults.

Put any part of body through bridle or wrap rope around any part of body.

Yell "hit it" until rope is tight and tips of skis are up.

Ski to the point of exhaustion.

Ski at night.

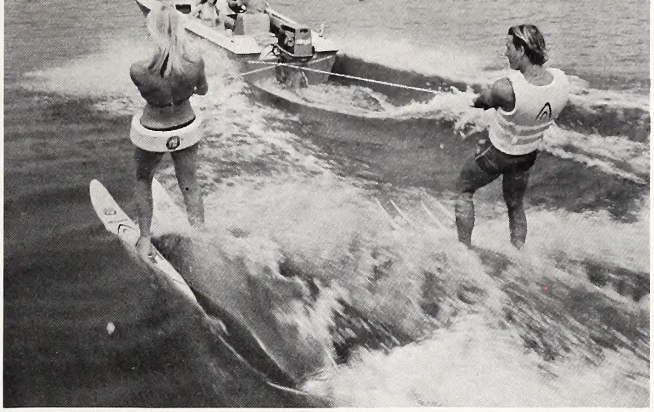
Ski directly ahead of another boat—you could fall.

Ski doubles with different length ropes.

Attempt fast landings directly toward shore.

Jump from boat while it is moving.

Climb into boat with motor running or climb into boat from stern. ⬍⬍



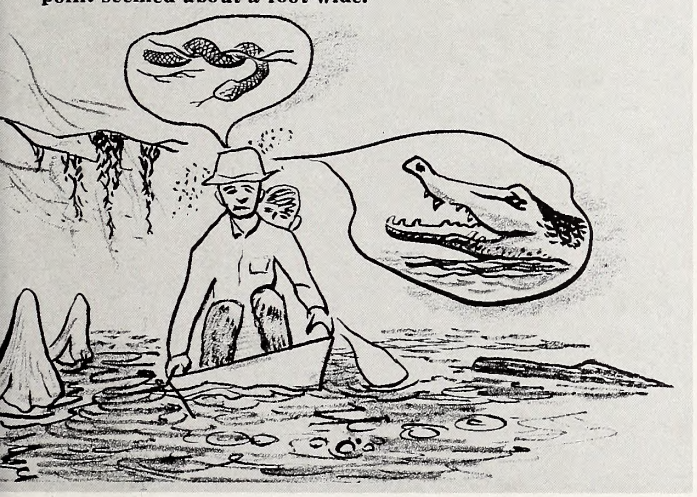
The right way; the boat operator is concentrating on giving the skiers a good, steady ride while the observer is ready to relay any information from the skiers that the operator may need.

• CAT HOOKS from page 23

over me or if this was the time he set aside each day for his coffee break.

We had a few hooks set out and it was growing darker when Bill decided that it was a good time to run aground (ground? In the swamp?) and dump out some of the water that was filling the stern of the boat. Desperately, I started looking for a dry swell

Swaying Spanish moss became coiled cottonmouths, and drifting logs turned into hungry gators. The boat at this point seemed about a foot wide.



and began to formulate plans to run the four miles to the nearest phone booth. I felt just like one of those guys in the ad who says "My insurance company? New England Life, of course. Why?", and I could see myself stepping on an alligator's head.

Since we had not actually been introduced to any snake families, the dumping session went well, and I downed another inch of McKenna. I was beginning to feel like a swampy Paul Bunyan, and bravery—plus Henry—was adding to my self-reliance.

I began to think: "So what if the mosquitoes are handing out printed menus on my leg? Who cares if that was a Black Widow spider I saw passing on the inside lane of my tennis shoe? What the heck, you only live once, so you gotta grab for all the gusto you can!"

I was picturing myself in a beer commercial, hairy chest sticking out of a half-buttoned shirt, when Bill suddenly announced: "Well, that's enough. I'll put you back on shore and go back to check the hooks once."

The bubble burst. It was downhill from there. Shoot, I'm ready to go again . . . but this time I'll take a WHOLE bottle of Henry McKenna, some 6-12 repellent, two issues of Playboy, a loaded Remington automatic, a TV, a lifejacket, a cabin cruiser, the latest issue of Field and Stream. . . . ⬍⬍

ADDRESS CHANGE NOTIFICATION

Name_____

Old Address_____

_____

_____

New Address_____

_____

_____

Zip Code_____

IMPORTANT:

Enclose present Address Label

Please notify us promptly of change of address.

Use this blank to subscribe NOW — $2.00 a year

Add $1.00 for overseas postage

No stamps, please

WILDLIFE IN NORTH CAROLINA **New ☐**

325 N. Salisbury St., Raleigh, N. C. 27611 **Renewal ☐**

I enclose $_____; send me WILDLIFE IN NORTH CAROLINA for_____years starting with the earliest possible issue.

Name_____

Street or Route_____

City_____ State_____ Zip Code_____

Due to rising production and printing costs and likelihood of periodic increases in the subscription price for WILDLIFE, a limit of FIVE YEARS is being placed on new and renewed subscriptions.

PHOTO BY TED DOSSETT

In The Garden

The garden spider, frequently called the "writing spider," spins a strong web in which it captures a wide variety of insects. It should be considered beneficial and certainly not dangerous—unless you're a grasshopper . . .

STATLIBR* 1SAMPLE9999 1
DIV OF STATE LIBRARY *
109 E JONES ST
RALEIGH NC 27611

LITHO BY THE GRAPHIC PRESS, INC., RALEIGH, N. C.

Raleigh

Wildlife

IN NORTH CAROLINA

SEPTEMBER 1975

N. C.
SEP 18 1975
Doc.

Put an Indoorsman in your shoes

For purposes of this message, an indoorsman is anyone who is not an outdoorsman —not a hunter or fisherman, for example. There are about 55 million outdoorsmen in the United States—but there are over 150 million indoorsmen. By sponsoring National Hunting and Fishing Day programs on September 27—and by making sure that there will be plenty of indoorsmen on hand to take part—you can make major strides in giving these people a better understanding of the sportsmen's involvement in conservation. The results will be a brighter future not only for hunting and fishing, but for conservation as well.

Please use the order blank below to obtain information on how to organize a program in your community.

TO: NHF DAY
1075 Post Road, Riverside, Conn. 06878

Please send_____copies of the NHF Day Action Manual @ $2.00 per copy.

_____NHF Day bumper stickers @ 5 for $1.00.

_____NHF Day Aids Kits @ $3.00 per kit.

I enclose $_____ to cover the cost of my order.

Name_____

Organization_____

Address_____

City_____ State_____ Zip_____

National Hunting & Fishing Day September 27, 1975

An Equal Opportunity Employer

National Hunting & Fishing Day
SEPTEMBER 27, 1975

STATE OF NORTH CAROLINA

JAMES E. HOLSHOUSER, JR.
GOVERNOR

DEPARTMENT OF
NATURAL AND ECONOMIC RESOURCES
JAMES E. HARRINGTON, JR.
SECRETARY

NORTH CAROLINA
WILDLIFE RESOURCES COMMISSION

ROSCOE D. SANDLIN, CHM. _ JACKSONVILLE
JAY WAGGONER, V. CHM. _ _ _ _ GRAHAM
ROY A. HUNEYCUTT, SECY. _ _ _ _ LOCUST
W. K. ANDERSON _ _ _ _ _ _ _ NEWLAND
WILLIAM C. BOYD _ _ _ _ _ WINSTON-SALEM
WALLACE E. CASE _ _ _ _ HENDERSONVILLE
HENRY E. MOORE, JR. _ _ _ _ _ _ CLINTON
DEWEY W. WELLS _ _ _ _ _ _ _ _ CAMDEN
V. E. WILSON, III _ _ _ _ _ ROCKY MOUNT

CLYDE P. PATTON
EXECUTIVE DIRECTOR

RICHARD B. HAMILTON ROBERT B. HAZEL
ASSISTANT EXECUTIVE DIRECTORS

DIVISION CHIEFS

REX GARY SCHMIDT _ _ _ _ _ _ EDUCATION
CLIFFORD L. BAMPTON _ _ _ _ _ _ _ GAME
W. DONALD BAKER _ _ _ INLAND FISHERIES
DONALD E. CURTIS _ _ _ _ _ PROTECTION
CHARLES R. FULLWOOD, JR. _ MOTORBOATS
AND WATER SAFETY

The Editor gratefully receives for publication news items, articles, and photographs dealing with the North Carolina out-of-doors, but reserves the right to reject materials submitted. Full credit is given for all materials published.

Have you moved recently? Change your address promptly. Either send in an old mailing label from your magazine along with new address or type or print complete old label information exactly as it appears on your magazine.

WILDLIFE IN NORTH CAROLINA is published at the Wildlife Resources Commission offices, Albemarle Building, Raleigh, N. C.

Phone Number AC 919/829-7123

Second class postage paid at Raleigh, North Carolina 27611.

• • •

SUBSCRIPTION RATE—$2.00 per year (12 issues). Add $1.00 for overseas postage except APO, Canada and U. S. possessions. Back issues —$.25 per copy plus $1.00 minimum for handling and mailing; back issues may not be available. Send check or M. O. payable to WILDLIFE RESOURCES COMMISSION. Stamps cannot be accepted. Any employee of the Wildlife Resources Commission may accept subscriptions, or send to WILDLIFE, Albemarle Building, 325 N. Salisbury Street, Raleigh, N. C. 27611.

Wildlife circulation this issue 74,060

Wildlife IN NORTH CAROLINA

The official publication of the NORTH CAROLINA WILDLIFE RESOURCES COMMISSION, Raleigh 27611. A monthly magazine devoted to the protection and restoration of our wildlife resources and to the improvement of hunting and fishing in North Carolina.

VOL. XXXIX NO. 9 SEPTEMBER, 1975

IN THIS ISSUE

Doves Down A Flyway
by Bob Gooch ..... Page 4

Martian in A Rabbit Trap
by Derry Walker ..... Page 6

An Open Letter
by R. Wharton Gaul ..... Page 8

A Legacy of Wild Trout
by Jim Dean ..... Page 9

Taxidermy for the Sportsman
by Gerald Almy ..... Page 10

Resource-O-Gram ..... Page 13

Towhees
by Duane Raver ..... Page 14

Zing . . . Sst . . . Thunk!
by Ted Dossett ..... Page 16

Stem to Stern
by Ed Jenkins ..... Page 18

North Carolina's Duck Harvest
by Stuart Critcher ..... Page 19

Housing Shortage
by Frank Jeter, Jr. ..... Page 20

Snakes: What Danger Lurks
by I. D. Prather & R. N. Conner ..... Page 22

Recording Nature's Sounds
by Dwight L. Peterson ..... Page 24

Back of the Book ..... Page 26

EDITORIAL STAFF

DUANE RAVER _ _ _ _ _ _ _ _ _ EDITOR
LUTHER PARTIN _ _ WRITER-PHOTOGRAPHER
JIM DEAN _ _ _ _ WRITER-PHOTOGRAPHER
TED DOSSETT _ _ _ WRITER-PHOTOGRAPHER

An objective of all levels of government should be to achieve and sustain a balance of the social, ecological, and economic benefits derived from natural resources. Without such balance none of the factors on the scale will be worth weighing.

Soon now, the sultry nights will slowly drift into cooler times, and the sourwood will take on even deeper reds. Fall is on the way. Most wildlife prepares in some way for the winter, and this raccoon is storing up a few extra calories and putting on a heavier coat. Photo by F. Eugene Hester.

DOVES DOWN A FLYWAY

by
Bob Gooch
Troy, Virginia

"WE need some more guns."

The fellow on a stand near the farm road was almost pleading. I was en route to the post office with a manuscript when I noticed the hunters in a grain field, and stopped to check on their success. It was September and the doves were just beginning to flock for their annual raids on the local farmers.

The temptation to join them was strong, but in a rare display of discipline I resisted in deference to a desk load of work. Turning my back on a good dove shoot is always tough.

But do you really need a lot of guns for a successful dove hunt?

I don't think so.

I agree the big dove shoots are fun—good fellowship, socializing, and usually plenty of shooting. The better shots get their limits early, and the dubbers keep the ammunition manufacturers happy. I enjoy these hunts and sometimes even get my own limit!

The big shoots are run on the theory that numerous hunters stationed all around a field will keep the birds flying. This is no doubt true. If it is a good field, rich in seeds or other food, the birds seem obsessed with feeding in that field and that field only. Turned back by a barrage of shot, they will make repeated assaults on the field, and those that get through feed contentedly in the middle of the field. This is the kind of fast shooting the social hunts are supposed to produce.

But the birds are going to fly anyway.

Take a little time some sunny autumn afternoon and watch the doves trade back and forth over a freshly harvested corn field, or over a freshly tilled field planted with grass seeds. There may not be a hunter within miles, but the doves will remain active most of the afternoon — not the same doves, but hundreds of them pitching into the field and filling their craws with grain or seeds.

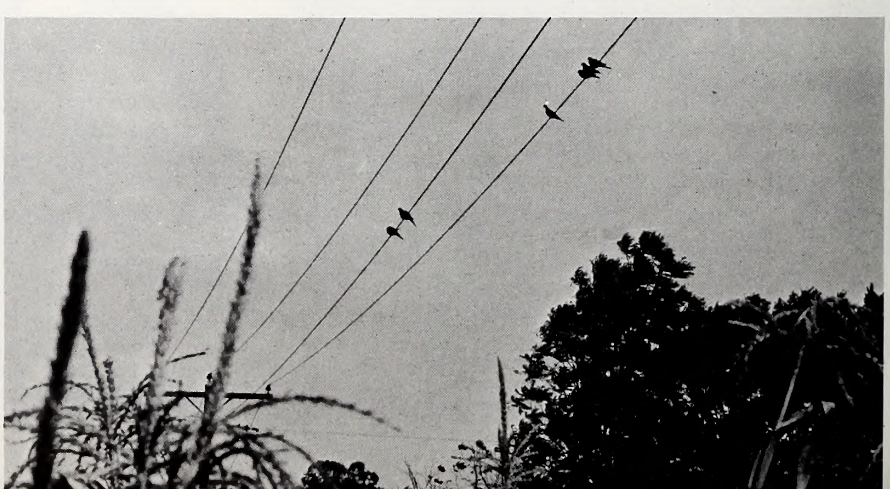
The typical feeding routine of a dove begins in some rich field or other feeding area. Its craw filled, the bird then wings off in search of grit to grind against the food in its gizzard, its digestive organ. Doves sighted along the shoulders of roads or along gravel and sand bars of streams are picking up grit. They sometimes pick it up in the field in which they are feeding.

Its food and grit needs satisfied, the dove then heads for water. This may be a nearby creek or pond, but the birds prefer quiet, almost stagnant water.

After watering, the gray ghosts fly to a resting or roosting place. Those that feed early usually seek a cool perch in a tree, or possibly a sun-filled spot in the grass or weeds if the weather is cold and windy. Those that feed late in the afternoon may go directly to a roost.

Doves often settle on utility lines to study a field before entering. Keep watch for them when you're looking for a hunting place. And never shoot at power or telephone lines or poles.

PHOTOS BY THE AUTHOR



The lone hunter, or a small party of hunters, can get plenty of shooting by taking advantage of these daily flyways. Study the pattern—to a field to feed, to a road or creek for grit, to water, and finally to a resting place or roost.

Stands along these flyways will prove productive. The shooting may not be as fast as that over a big field surrounded with hunters, but it will put birds in the game pockets.

Most doves seem to fly the well traveled routes into a field. The observant hunter will be able to select the better flyways after an hour or so in the field. If there is a lone tree near the edge of the field, or a utility line, the birds often alight there first, apparently to study the field, before sitting down to feed.

Doves are rarely in a hurry. To the hunter with an itchy trigger finger, their vigil in the tree or on a line may seem like hours.

Most doves enter a field from a resting place in a nearby field, and their routes become evident upon observation. On hot or warm days they may remain in the relative coolness of the woods until mid-afternoon, but on cold days they will enter the field much earlier.

The hunter should seek some kind of cover along these routes. It can be extremely skimpy—the corner of a fence, for example, several stalks of standing corn, or a small, bushy tree. All that is required is that the hunter break up his outline. Camouflage clothing helps. Camouflage against a grassy background is often sufficient.

Ideally, the stand should be located where the hunter can pick up the approach of the birds from a distance. Backed up against a heavily wooded area, the hunter may find that the birds are over his head before he is aware of it, and out of range before he can get off a shot.

Trying to locate an area where the birds go for grit is usually difficult. And too often it is along a road where shooting is a hazard to travelers—and often illegal. On the other hand doves prefer clean areas for feeding, picking up grit and watering. Bear this in mind when looking for feeding and watering areas as well as areas where the birds seek their grit. If the hunter can locate such an area that also offers good grit he may uncover some good shooting.

The birds undoubtedly feel safer on the bare ground because they enjoy better visibility there. There are no weeds or grass to hide a lurking cat or fox.

Watering areas do often provide good shooting—much like shooting ducks over a pond or marsh. Here again, the watering birds will seek clear areas were the banks are free of vegetation. The hunter will drop many birds on the water, so he should keep this in mind when he shoots a watering hole. He needs some means for retrieving the downed birds.

Taking a stand near a roosting area can be productive, but if you don't keep an eye on the sun it can quickly become illegal. Legal hunting time ends at sunset. You might be able to squeeze in a few minutes of shooting before the sun brushes the western horizon, but the morality of this is questionable. The birds, confronted by hunters at their roosts, may attempt to substitute other less desirable areas, exposing themselves to the weather and predators. Roosting areas are chosen for cover and protection, and carefully selected. Substitute ones are too often inadequate.

Dove hunting is often a social event as well as a sporting one. This party of hunters is heading for the field the easy way . . . behind a tractor.

Irrespective of the type of hunting done, the crippling loss among doves is high. Although they could and should be, retrieving dogs are rarely used, and apparently some good retrievers will not work doves.

The hunter should make an all-out effort to mark down every bird he drops. This is particularly true when shooting over thick vegetation such as a weedy field or one covered with high grass. It is less of a problem when the shooting is done over a harvested corn field or a freshly tilled one. The birds are easy to spot on the bare ground.

When the cover is heavy the hunter should refrain from attempting doubles. If he does go for a second bird he is almost sure to lose the first one. In his concentration on the second one he too often loses the location of the first bird.

The best way to assure recovery of a downed bird is to keep an eye on it from the time it folds at the bark of your gun until you pick it out of the weeds or grass. Even then it is often difficult. Some birds will be lost regardless of the pains taken to avoid this loss.

Dove shooting, like pass shooting for ducks, too often tempts sky busting—shooting at birds beyond effective range. Such a practice not only drives the birds off before they get within good shotgun range, but it also contributes unnecessarily to the crippling loss. Respect for the birds as well as regard for fellow hunters rules out the practice of sky busting. Don't attempt it.

There are advantages to hunting alone or in small parties. Good bags are a bit more difficult to come by, but the satisfaction of a hard earned limit is greater. The lone hunter must be more familiar with the habits of his quarry. He is more of a hunter than just a shooter.

Try this approach the next time you are having difficulty rounding up enough friends for a party dove shoot.

"Dad, There's A Martian In The Rabbit Trap!"

by Derry Walker

"DAD, what does a rabbit trap look like?" asked Tom, my nine-year old, as he and Tim, my seven-year old, cantered into the room. I looked them over. On that Friday afternoon, both were armed with ball point pens and carried sheets of paper covered with blue marks, outnumbered only by the blue marks on themselves.

"Yeh, Dad," Tim chimed, "we wanna catch a rabbit. We ain't gonna eat him, though. We're gonna keep him for a pet. He can live with the chickens."

"The chickens will love that," I predicted. "Tim, your tennis shoes are on backwards." He looked down.

"No they ain't. They're just turned around."

"That's what I said, and don't say *ain't.*"

"No, you said backwards. If they were backwards, they'd be pointin' behind me. They're just turned around, see?"

"Semantics from a seven-year-old," I observed

"What's see-mantee?"

"You know," Tom interrupted, "she's a witch on T.V. But Dad, what's a rabbit trap look like? Like this?" he asked, holding up a primitive Rube Goldberg.

"Or this?" Tim queried, thrusting his paper by Tom's. Side by side the two drawings looked like a shoe box gored by a moose.

"Mmmmm," I mused, examining the roughs.

"He went 'mmmm'. He don't know," Tim muttered.

"He *doesn't* know," I corrected.

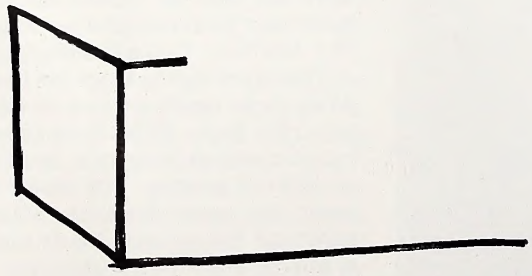
"Who don't know?" Asked Tom. His mind had strayed and returned.

"Never mind. Let me think a minute." And think I must, for it had been at least 20 years since I had seen a rabbit trap.

"Seems like it's a rectangle, with one end open, and a sliding lid that snaps down . . ."

"What's a reck tangle?" Tim frowned. "Reck tangle? Draw one. Draw it," Tim was growing irate. He had been too long at the drawing board.

"Well, wait a minute." I scratched a few lines on Tom's paper and the telephone rang. When my wife called me to the phone, I had gotten this far:



It was enough for the boys. They withdrew to study their new information. I forgot all about the rabbit trap until the next morning, which was Saturday. I was busy with mowing and raking, and didn't see much of Tom and Tim. Now and then they appeared at the shed, gathered scraps of lumber, and disappeared into the pines. There would follow sounds of furious hammering and sawing interrupted occasionally by audible but indistinct cries of disagreement.

Maybe they were building a treehouse. Whatever it was, they were having fun, so let 'em go. I'd look in on the construction later.

BY nightfall, the wind had picked up considerably. I carried the week's trash out to the incinerator and set it ablaze. With the wind up like it was, I decided to stay by the fire until it burned down a bit. As I stood there looking out across Fort Bragg Reservation in the East, I noticed that maneuvers were in progress. Flares were descending, miles away, and red lights from helicopters and other aircraft were flashing busily. Now and then I picked up the drone from engines in the wind. It was a clear, cool night, and a full moon was rising. I wondered if the paratroopers would have to jump into that stiff wind.

We put the kids to bed at nine, and settled back for television. An hour or so passed, and I was getting sleepy. I would have dropped off, when suddenly an unbelievable racket exploded in my son's room. It was as if a garbage truck had overturned in a bowling alley.

"What on earth?" my wife screamed.

"I don't know," I shouted, stumbling toward the boys' room, where the lights were now on. I stopped at the door and saw the boys scrambling into their jeans and shoes. There, under the window, lay the source of all the racket, which had now stopped: At least a dozen large tin cans, tied together with string, had apparently been snatched from a nearby table and dropped into a tinny heap on the floor.

"That's our signal! Signal!" the boys hollered, scampering about like beagles on the trail.

"We've got a rabbit in the rabbit trap," Tom shouted.

"Oh? Oh!" I said, looking again at the pile of cans. The string that connected them ran up and under the bottom window, and disappeared into the darkness. My wife peered into the confusion.

"Rabbit trap signal," I explained. The boys, armed with flashlights, shot past us and out the back door.

"*What* rabbit trap?" the wife demanded.

"Well . . . . I don't know." Then I remembered the hammering and sawing. "They built one today, out in the woods." Her eyes narrowed.

"Did you let them play with the hammer, again?"

"Well, I guess I did." She wrung her hands in despair.

"After the *last* time, when they nailed fake whitewalls to my tires?"

"They were younger, then," I reasoned, recalling the day of the four flats. She went to the window and

peered into the darkness.

"I can't see them. Are you going to check?"

"Oh, they'll be right back. Probably some dog snarled their line." I returned to the den and looked for my shoes. I had them laced when the two trappers roared into the den.

"Dad! Mom! It's a Martian! A real Martian! We got a Martian in our rabbit trap!" Tom was wound tight.

"Yeh!" Tim puffed, "he talks Martian, and he's got a funny helmet and everything. Come on, Dad, come on." I looked at the wife who looked at the ceiling. The boys tugged.

"Okay, okay," I said. "Let me get my jacket."

TOM and Tim towed me into the pines. Just as my eyes grew accustomed to the moonlit foliage, we came to a small clearing, where an incredible scene awaited us. First, the structure: There stood a large rectangular box, on the order of an over-sized, flat-topped dog house, built of plywood and lumber scraps; that would have been strange enough but then there was the occupant, or prisoner, or both. I squinted and walked closer. Struggling in the moonlight was a man, wedged firmly in a hole in the flat roof of the box. Behind him there lay what appeared to be miles of strings, connected to a huge silvery shroud that billowed in the wind. I walked to within a few feet of the spectacle, my mouth hanging open. Now I could see that the man wore an army helmet, combat fatigues, and a large pack. An automatic rifle was wedged into the hole with him, and that billowing shroud was a parachute. The intruder had stopped struggling, and stared at me glumly.

"Well, myte, are y' standin' there lookin' bloody stupid all night, or are y'helpin' me outta this bloody box?" he snarled.

"See, Dad. He don't talk 'merican," Tom whispered.

"He *doesn't* talk," I mumbled automatically. Tim was peering around me. His hands grasped my belt firmly. He wasn't going to be left behind. Finally, I spoke to our visitor:

"Who are you? A paratrooper?" The man grunted and sighed.

"No, myte. You know bloody well I'm Mary Poppins." Then he slammed his fists on the box,

"WILL YOU GET ME OUTTA THIS BLOODY COFFIN!" Tim's eyes widened:

"Did he say the box was bloody, Dad?" I was confused.

"Why do you talk with an English accent?" I asked, stepping closer. The man slumped, and spoke wearily:

"I am Leftenant Timsley Wheatcroft, Her Majesty's Special Tactical Commando Forces, on special assignment to Fort Bragg. I'm here for special training, and that's all there is. The Bloody wind blew me miles from th' jump zone, but I managed to miss all th' bloody trees, made it down safe, only to land in this bloody chicken coop."

"Rabbit trap," I corrected. The commando threw me a menacing look.

"Wot w'z that?" he asked in a lower tone. "Did I 'ear you say *rabbit* trap, myte?"

"What's a myte, Dad?" Tom asked, now more curious than afraid.

"You've landed in my sons' rabbit trap, lieutenant."

"*Lef*tenant," he growled, eyeing the box. "What kind of bloody rabbits you got 'round 'ere, myte. This box? Maybe a bloody kang-a-ROO trap, but RAB'-BITS?"

"Yes, well, we'll get busy and saw you out of there. You'll be back with your unit in no time. Tom, go get the saw." Fears and doubts gone, it was time for action.

"Can't, Dad," Tom whimpered.

"Why not, son?"

"It got broken. Timmy used it for a diving board off the top of the box."

"You stood on the other end," Tim shouted. He would not take the rap alone.

• **continued on page 27**

"Well, myte, are y' standing there lookin' bloody stupid all night, or are y' helpin' me outta this bloody box?" he snarled.

An Open Letter to the Rising Seniors in North Carolina's High Schools

As I write this article, fishing in North Carolina is reaching a peak, Americans are heading for the open spaces including the parks and seashores in record numbers, and even the private recreational facilities are filling. Far to the north in Canada, ducks and geese are bringing their broods off their nests and teaching them to feed and to fly. Farmers are bringing their crops to near harvest, and the hot and showery weather of midsummer continues. What about this heritage of ours—this beautiful land of mountains and seas, whose open areas are so rapidly shrinking? It is the number one concern in our nation today.

Who actually cares about the beauty that is and was America? What about big business? There is no indication that the major oil, steel, and automobile producers care one way or the other. There is not much more interest from the industries that profit from the outdoors. The forestry industry persists in striving to clearcut areas though it has long since been shown that this is a highly destructive procedure. The commercial fisherman has yet to realize that the sport fisherman would be his strongest ally if he would only give him the chance. Mining companies continue to lobby for overthrow of strip mining legislation, and as of this date they have been successful. And worst of all, there is the developer—the man who sees a strip of land as a source of dollars for his pocket and is unable to see beyond this point.

All right then, who does care about the land? You do. You and a few other groups including a few concerned citizens, professional conservationists, hunters and fishermen, and a handful of congressmen in Washington. The financial clout lies with the business and other industrial groups who care a little for the preservation of our heritage. However, our strength lies in the vote, and perhaps more important in the fact that we are in the right. And we are in the right, never doubt it. The preservation of the earth as a decent place to live is and should be of first importance to us all.

So what do we do? The question is what do we want to do. We want to obtain clean air and clean water. We want to preserve the natural beauty and wildlife of our earth. We want room to live and breathe. We want freedom from noise and from the stench of slums and crowded cities with their crime and filth. We want an opportunity to grow and to raise our children amidst quiet beauty, close to the earth that gave us birth. As Mr. Justice Douglas has pointed out, even a tree has rights. We shall have to fight for these rights and do it by the vote.

As you reach the age of 18 the vote is yours. O.K., start asking the candidates questions: What about strip mining? What about air pollution standards? What about restrictions on unnecessary and ugly developments? What about destructions of marshes, mountains, and other areas where a man may breathe free. It's up to you. This is your world. This is the earth that gave you birth. If you fight for her, and if you have even only a small and local success, she will repay you a thousand times over. She is a generous lady when she is not abused.

R. Wharton Gaul, M.D.

A Legacy of Wild Trout

by Jim Dean

YOU'VE almost got to travel and fish in other states to realize how fortunate you are to live in North Carolina. I know I can be accused of a certain amount of prejudice in this matter, but I honestly do think I happen to live in the finest state in the Union, and I also believe we've got some of the finest trout fishing in the world.

I know what you're thinking. What about Idaho and Montana? What about the Beaverkill, the Letort, and the Battenkill? What about Argentina and New Zealand and all those other places?

Well . . . yes . . . that's true. There is good trout fishing in those places. I've fished a little of it myself (though not out of this country). Henry's Fork of the Snake River in Idaho is one of the best rainbow streams in the world and widely acclaimed as such. So are the spring creeks of Montana. The Beaverkill is considered mecca for trout fishermen, worthy of an annual pilgrimage.

They're different. Yes. But better? This past week, I walked four miles into the headwaters of one of North Carolina's remote streams. I went far past the places most people fish, and during the last two miles, I did not even see a footprint. Up there, the rocks are entirely covered with moss and show no sign of traffic. Trees canopy the creek and it is dark even at mid-day.

The trout are all native "speckles" (brook trout). They're almost black from living in the gloom and their flanks are spattered with red and blue spots. Their fins are bright red, fringed in white. No other creature is quite so beautiful.

Now, what I'm getting at is this. I would not trade that day on the headwaters of that creek, catching wild speckles, for a day on any other river in the world. I would not trade it even for a day on Henry's Fork or Nelson's Spring Creek — and I've fished them both. To be perfectly honest about it, I'd like to be able to fish all of these streams but I'd be hard pressed to choose a favorite and exclude the others.

Another story. A day or two earlier, I fished one

PHOTO BY JIM DEAN

of the larger streams in our "native" and "trophy" trout program. On native streams, you can fish with flies or single-hook artificial lures and keep four trout (browns and rainbows 10 inches or over and brook trout seven inches or over). On trophy streams, only artificial flies are permitted and you may keep only one trout per day (browns or rainbows 16 inches or over and brook trout 12 inches or over). These regulations protect wild populations and it is rarely necessary to stock trout.

It had rained and I fished while the water was rising and growing slightly discolored. The fishing was fantastic. Two of us caught brown trout right and left all afternoon, and quite a few fish were in the 13-15 inch class. There are bigger trout there, and all are streambred.

Would I swap that for a day on the Beaverkill? Not on your life. The Beaverkill is stuffed with hatchery trout and poorly managed. Though still good, it is but a pallid shadow of what it once was. I like to fish it, but I wouldn't give up our water to do so.

Like I said at the beginning, I'm proud of North Carolina's trout fishing. On our 24 native and trophy streams, the fishing is the best in the southern Appalachians for wild trout under natural conditions. No other state has so many streams managed to preserve wild trout and this program is now being widely copied by other states because it provides good fishing for wild fish despite growing angling pressure. Also, it doesn't cost the sportsman an arm and a leg to administer.

I find all this encouraging because I have often wondered whether my children and their children would still be able to catch wild streambred trout. I'm beginning to think they might.

Taxidermy for the Sportsman

by Gerald Almy

AT one time or another, we've all faced the same dilemma. Lady Luck has shone upon you and there lying at your feet rests a handsome buck with a fine rack; or maybe a hefty bass or an especially large crappie flops on the bottom of your johnboat. Perhaps you've bagged a grouse which might not look like anything unusual, but which had eluded you on numerous trips before and required a quick, difficult shot to bring down.

You want to preserve this wild creature that has provided you such pleasure in pursuing and capturing. Pictures help, but if you're like most of us, they usually end up getting piled up carelessly in an old dusty shoebox stashed in the back of the closet and seldom looked at.

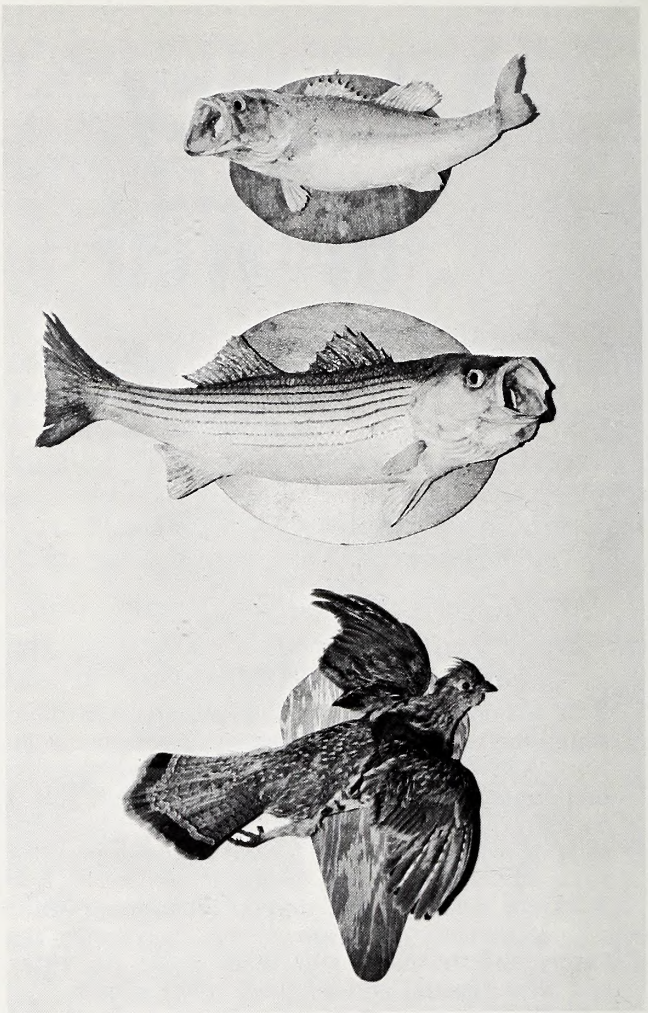
You know what you would really like — a mount of your quarry to hang proudly on the wall. But it's the same old saw — too much money. You can't afford the luxury. Oh, maybe once or twice an unusually noteworthy specimen may compel you to spend the large sum required to get it "stuffed." But how many memorable fish, birds, or animals do you bag in a lifetime? More than a couple if your attraction to the sport is very strong. One or two a season would be more like it. Even more if you happen to have a banner year.

And then, of course, a fish, animal, or bird doesn't necessarily have to be enormous for you to want to preserve it. Quality, not size, is the all-important consideration.

No one but myself would think the average-sized cock grouse hanging on my office wall is anything special. But that bird and the memories he stimulates each time I gaze at him — my first grouse ever bagged — are priceless.

Yet he cost me a mere 86 cents for the materials to mount him myself, and took barely four hours of my time — and a very enjoyable four hours they were. Taxidermy is an easily learned, absorbing pastime which more sportsmen would do well to try. Next time you land an average-sized fish or bag a game bird or mammal, why not let your creative instincts go to work and see what kind of a mount you can come up with.

It's best to start with just an average specimen, for your first try or two will probably not be especially attractive. But don't give up. By the third or fourth specimen of a particular game or fish species, you should be getting results close to those of professional taxidermists.



A four-pound bass, a nine-pound rockfish, and a ruffed grouse . . . all bring back memories of good days afield. Commercial taxidermy is expensive, and with some practice, you can do mounts of your own.

Photos by the Author

This small assortment of basic taxidermy tools and materials will see the beginner through numerous mounts. The cost is quite reasonable, and most are available locally or through a taxidermy supplier.

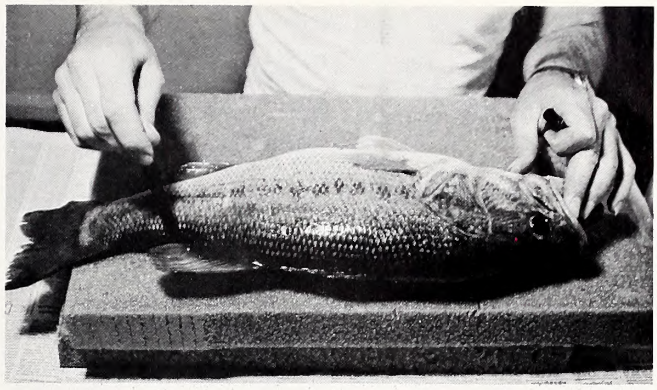
I still keep the first fish I mounted, for memory's sake; but what a strange looking creature that three and three-fourth pound pickerel turned out to be! Yet by my fourth fish, a five-pound largemouth, things were looking up indeed. The same applies to the first two quail I prepared — skinny necks, drooping wings, sagging head, flat thin bodies, and unnatural, stilted poses were the norm. By the time I got to my first grouse, though, my apprenticeship on the quail had taught me a thing or two about mounting birds, and the outcome was 100 percent better.

Like anything else, including fishing and hunting, taxidermy is an art which takes practice to become proficient. Once you serve your apprenticeship, though, you'll have a rewarding hobby at your fingertips for decorating your walls and desk tops, a worthwhile pastime to occupy those evening hours otherwise spent in front of a stultifying TV set. You will be proud of the priceless trophies which will insure that the memories of your hunting and fishing trips remain etched strong and bright in your mind.

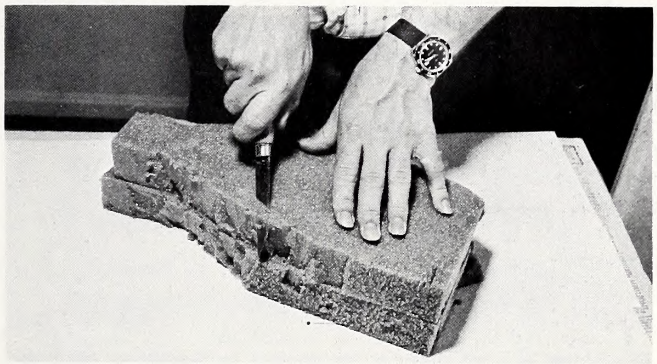
The tools required for the beginning, amateur taxidermist are few in number and low in cost. Basically, you can get by with a pair of scissors, razor blade, scalpel, wire cutters, dubbing needle, brain spoon, knife, and fat scrapper. Among materials you will need to get started are borax, corn meal, string, thread, styrofoam, pins, needles, cotton, excelsior, wax, and an assortment of glass eyes. With these tools, and materials you should be able to mount birds, fish and small game animals. Preparing deer heads will require head forms, and ear linings, which can be ordered from any reliable taxidermy supply house, after measuring the animal. A list of several such firms is included at the end of this piece. Others can be found in the advertisements on the back pages of most national outdoor sports magazines.

Of course you can't just start mounting a specimen by "feel" or instinct. You'll need a guide to help you along the first half dozen times or so. Several good books on taxidermy are available at well-stocked book stores and libraries or they may be ordered directly from the publisher. A list of several of these books

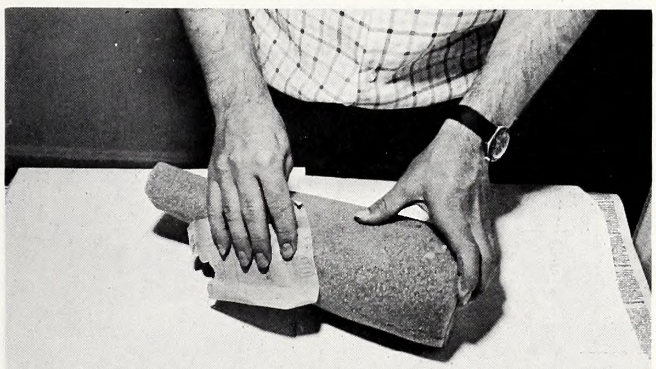
It will help to study photos of live specimens for correct poses and positioning of wings, legs, etc. Locate the best natural base for the mount to enhance realism.



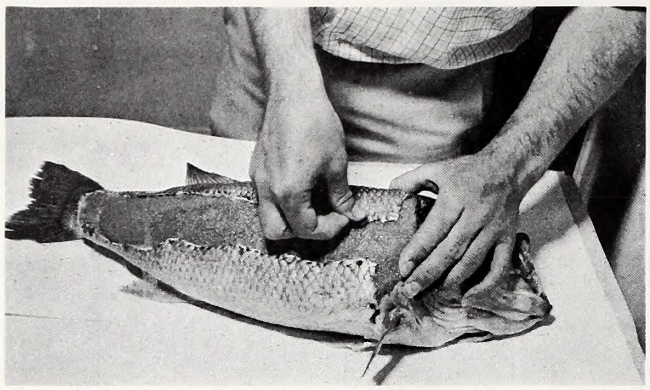
A fresh fish or freshly thawed one can be used. Lay the fish on a thick sheet of styrofoam and trace around the fish with a pen or marker.



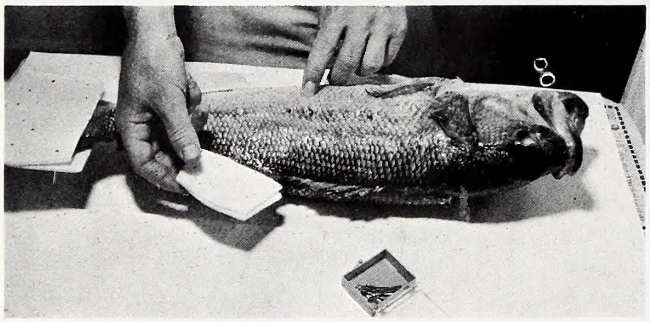
Using the traced outline and referring to the shape of the fish, carve a body to match that of the specimen, excluding tail and head.



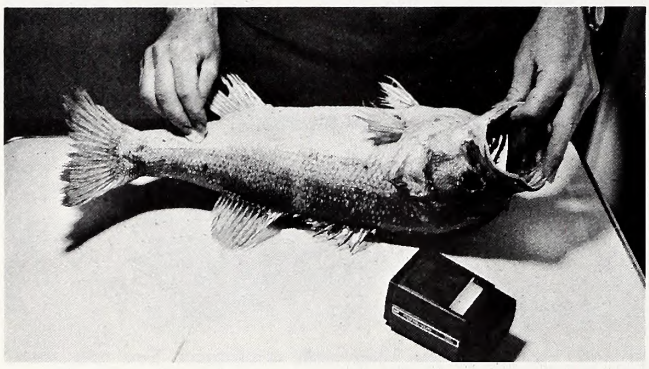
Smooth and shape the body with sandpaper. You may want to try a slightly curved body as if the fish were jumping. Skin out the fish, (below) working from the side which will not show. This is a slow, tedious job; all the meat must be scraped and cut free from the skin. Rub the skin with borax when completed. Then the skin should be soaked in a borax solution for two or three days for curing.



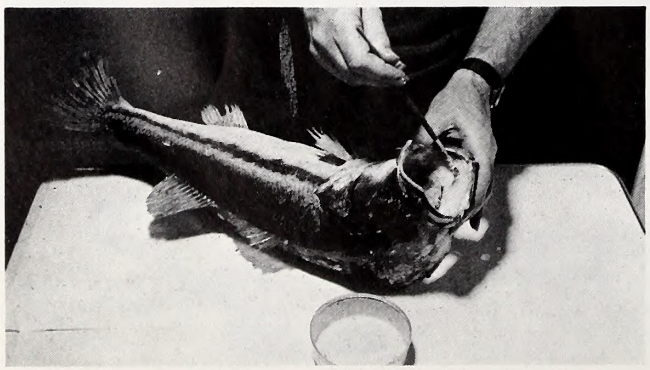
Stretch the still-wet skin over the body tightly and pin it on the backside. Make sure that no wrinkles or sagging spots form.



Use pieces of styrofoam or cardboard to "card" or hold the fins in flared position for drying. Straight pins work well. Prepare the fish for painting by rubbing it with turpentine. Mix oil colors to match those of the freshly-caught fish. A color slide in a viewer will help. Apply colors sparingly, utilizing the color and markings in the dried skin.



Wax can be applied to the inside of the mouth and smoothed with the fingers or a brush. Although eyes were not fixed in place before the final paint job, it is usually best to do so. Paint the backs of the eyes from color notes made before the death of the fish. When the paint is dry, spray with varnish or other fixative (right).



Anything worthwhile takes time. Don't expect many shortcuts to quality work when it comes to home taxidermy. You may want to practice on something less than "trophies" to sharpen your skill.

will be found at the end of this article.

Be leary of signing up for any "courses" on taxidermy unless you're sure you are that interested in the hobby and feel their approach is best suited for you. Frankly, all you need to know to become a proficient hobbyist can be taught to yourself from following the instructions in a good book on the subject and applying a little elbow grease.

The most fun will come, of course, from mounting specimens of the animals, birds, or fish which you pursue most avidly — be it deer, grouse, squirrels, quail, bass, crappie, or whatever. From my experiences with all these species, I'd suggest starting out on a fish. They are probably the easiest creatures for the beginner to mount.

If you're looking for a filler for some spare time, taxidermy might just be the hobby to fill the void. For fishermen and hunters, it's a doubly rewarding pastime, allowing you to "get the feel" of the very creatures that are the wellsprings of a lifetime passion. It's a labor of love.

Books for the Beginning Taxidermist:

Grantz, G. J. 1967. *Amateur Taxidermist. Allentown, Pa.*

Grantz, G. J. 1969. *Home Book of Taxidermy and Tanning.* Stackpole. 160 p.

Moyer, J. W. 1953. *Practical Taxidermy, A Working Guide.* Ronald Press Co. New York 126 p.

Pray, L. L. 1943. *Taxidermy.* Macmillian Co. New York 91 p.

Where To Buy Taxidermy Supplies:

Herter's Inc., Waseca, Minnesota, 56093. Catalog: $1.

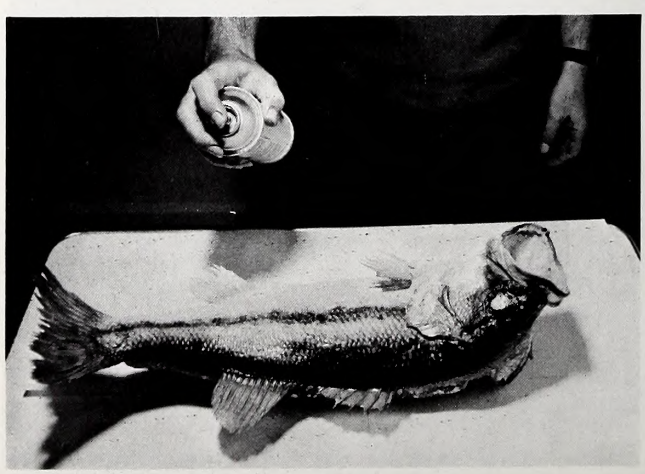
J. W. Elwood Supply Co. Inc., 1202 Harney, Box 3507. Omaha, Nebraska 68103 Catalog: Free.

Vandyke's. Woonsocket 17, South Dakota 57385. Catalog: 50¢

Taxidermy Supplies, Box 5815J. Bossier City, Louisiana 71010. Catalog: Free.

Penn Taxidermy, DA4, Hazelton, Pa. 18201. Catalog: $2

Jonas Bros., Inc., Dept. 3, 1037 Broadway, Denver, Colorado 80202. Catalog: $2.



NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Hunting Regulations

Since the regulations for migratory birds are selected after the regular hunting regulations are printed, the following seasons will not appear in the current regulations leaflet: DOVES: September 1 to October 11, and December 13 to January 10. RAILS AND GALLINULES: September 1 to November 8; WOODCOCK AND SNIPE: November 22 to January 24; SEA DUCKS: October 4 to January 17.

Boating Safety Classes

Flotilla 96, U. S. Coast Guard Auxiliary, Charlotte, begins its fall "Boating Safety and Seamanship Course" at 7:30 p.m. September 8 in the main public library, 310 N. Tryon Street, Charlotte. For further information call Charlotte (evenings only) 523-0877.

Raleigh Flotilla 91, U. S. Coast Guard Auxiliary, will begin a public 12-lesson Boating Safety and Seamanship course Tuesday September 16 at 7:30 to be held at the Red Cross Building, 100 Peartree Lane, Raleigh. For further information contact Colbert Crutchfield, Raleigh, 876-3158 or 832-3711.

The Division IX Public Education Officer announces that additional U. S. Coast Guard Auxiliary Flotillas are beginning 6 to 13 lesson "Boating Skill and Seamanship" classes. Following is a list of those flotillas which have definite plans.

Location-City	Telephone Information	Date	Time	Location of Class
Hickory-Flotilla 97	294-2450	Sept. 11	7:00 p.m.	Catawba Valley Technical Institute
Sanford-Flotilla 9-11	776-4539	Sept. 11	7:30 p.m.	Central Carolina Technical Institute
Monroe-Flotilla 9-12	233-4149	Sept. 9	7:30 p.m.	Union County Chamber of Commerce, Skyway Drive

Bow and Arrow for Deer

The bow season for deer is from Sept. 12 to October 8 in all counties having an open season on deer. Please check the current regulations for details. There is no bow and arrow season in Johnston County.

Cabin Cruiser Problem

The Coast Guard has determined that the death of a 9-year old boy was the result of exhaust fumes from an auxiliary generator reentering a cabin cruiser through a sink drain on one of the boat's toilets. If your craft uses an auxiliary generator, take heed.

Towhees

Text and Painting
by Duane Raver

THE moldering leaves of last winter scatter and fly in miniature explosions as if something were frantically digging among them for a lost valuable. Flashes of black and white and rufous reds jump about the centers of these leaf-tossing bursts. Only when the towhee pair emerges to the sun-lit clearing can we believe that such small creatures have caused such a substantial stir on the hardwood forest floor.

The two most common names of this furtive bird point out two of its identifying characteristics: red-eyed towhee and rufous-sided towhee. Some earlier ornithologists separated this group into several fairly distinct varieties such as the white-eyed towhee, the Alabama towhee, and even others. Several color phases do apparently exist, and the extent and distribution of the body colors do vary a great deal from bird to bird right in our own backyard.

The towhee seems to prefer the thickets, the brushy borders where forest meets fields. It's with apparent enjoyment that they scratch with such vigor among the leaves and pine needles in their endless search for insects, berries, and seeds. Nothing on the ground beneath them escapes being routed out, and this stiff-legged scratching is usually accompanied by the loud, clear call so distinctive as to be unforgettable.

Nesting is said to be on the ground or very low in bushes or other vegetation and usually fairly deep in a thicket. The towhee uses strips of bark, long grasses, dead leaves and similar material in weaving its nests. It is a year-long resident in much of our state, and the North Carolina population seems to increase substantially in the winter when the northern migrants come south.

An inch or more shorter than a robin, the towhee is a distinctive bird with movements and characteristics all its own. The white-bordered outer tail feathers flash against the later summer foliage as the male fans and twitches its tail in and out almost more rapidly than the eye can follow. They will respond to a backyard feeder, but seem to prefer a ground-level arrangement.

We hope that you will enjoy this print of the towhees amid the late summer foliage.

D. RAVER

ZING.. SST.. THUNK!

by Ted Dossett
Photos by the Author

Is it fishing, or hunting, or neither, or both? Whatever you call it, this type of sport has a lot going for it. Come on along for a watery adventure.

FOR a moment they seemed chiseled in a pose reminiscent of Mount Rushmore or some other heroic monument, except for one small flaw. Where there should have been the tight-lipped countenance of sculptured resoluteness, their mouths hung open in disbelief. Everywhere before them, the surface of the shallow pond was erupting with the spray of huge, thrashing fish.

"Lordy, it looks like a mortar attack on a rice paddy . . . them fish are tearing the place apart!" exclaimed Jimmy.

A few minutes earlier, almost before the slam of the pickup door had faded, they had heard the violent wallowing sounds that signaled carp in a spawning frenzy. Hastily grabbing up bows, lines, reels, the heavy fiberglass arrows, all the gear that goes with bow fishing, the men began to stalk along the creek. Occasionally, a pair of fish boiled powerfully beneath the overhanging branches but such distraction was momentary, for as the men neared the pond the sound of thrashing fish matched the rumble of a small waterfall. It was that which prompted their moment of slack-jawed immobility.

Waders flopping clumsily about them as they crossed a plowed field, Jimmy and Phil returned to bring their small boat up the creek. But all those frenzied fish had infected Don and he eased into the creek that separated him from a small, grassy island in the pond. He should have waited for the boat. Chest deep in the channel he paused for a moment and a quizzical expression settled over his face. Plunging his hand into the water he retrieved a lumpy brown mass that bore a faint resemblance to a wallet.

He let it drain for a few seconds, clamped it between his teeth while muttering some dark oath then struggled into the mucky shallows and began stalking a carp. The water had done little to cool his fishing fever and when Jimmy and Phil pushed beneath an overhanging willow a few minutes later, he proudly held up a stringer hung with a pair of hefty carp.

During the next several hours, the pond became a bow fisherman's paradise. Heavy spring rains released from Kerr Reservoir were raising the level of the pond and the grassy island became an ideal shooting station as the fish, apparently excited by the rising waters, increased their activity. In the grass, in the lily pads, in open water, the fish were working with a frantic intensity. Frequently, a pair of fish would come plowing through the lily pads towards the island, unaware of the waiting bowmen. And always, nervous excitement mingled with uncertainty for the pond was muddied by the rolling fish and estimating the refraction of an arrow shot into the water is at best an intuitive science. The

Fish movement is detected by twitching vegetation or a slight surface disturbance. The bowman must calculate the exact position of the fish taking into account refraction and distortion. And then: splat! Is he on?

sudden release of a drawn bow could bring the watery explosion of a hit or nothing, only the bland resistance of an arrow being retrieved from three feet of mud.

The heat, the pungent smell of mud, and spawning fish, the whooping of a bow fisherman after a successful shot, mingled in a steady rhythm under the bright June sun. A stringer was soon filled with fish, then a second and a third but the shooting was becoming more difficult for the fish had moved away from the island.

Across the pond a jumble of wallowing fish lured Jimmy and Phil to try their luck. Don moved into deeper water to work the edge of the lily pads. About 20 yards ahead, barely noticeable, the stem of a lily pad quavered with the telltale sign of a feeding fish. But a shot from that distance was impossible, he could not see enough of the fish and the deeper water had reduced the angle too much for a good shot. Don eased back into the lily pads where the water was shallower and the thick, interlaced roots would provide surer footing. The plant jerked as Don approached within 20 feet . . . the fish was still there and feeding more vigorously. Occasionally, its tail would thrash the surface but the movement

He's there, all right! (upper left) Big carp kick up a real fuss and some pull free of the arrow in their struggle. This one (left) went better than ten pounds. Every day isn't like this (above), but skill and luck combined to fill the stringer this time.

was too brief, but there was no time to size up the fish and get off a good shot. Yet, still Don held one advantage; the fish did not know he was there.

He knew it was only a matter of time until the creature showed itself. The time came sooner than he expected for the fish made a slow roll then submerged. Again, the bowmen had been surprised, unsure of his shot. Now he was afraid the fish had seen him; almost immediately it rolled again. This time he was alert and struck with a sure, confident shot.

The bed of lily pads exploded in a plume of muddy water as the fish sought to break free from the fiberglass shaft. Don dropped the bow and grabbed the 80-pound test line as it stripped from the reel. He could sense the fish was a good one through the urgency of the line pressing into his hands. The fish surged toward the bottom and the safety of the lily pads. Don could do nothing against the frantic efforts of the fish for he feared that too much pressure might pull the arrow free. In a few seconds, the carp had entangled the line in the submerged stems. Holding the slack line, Don was convinced that he had lost the fish but suddenly the line tightened . . . the powerful thrashings of the fish had actually sawed through the stems and now it was clear again. In that brief moment of false freedom, the carp had made a last run for open water before it rolled on its side, exhausted. Don hefted the fish, 12 pounds at least, he estimated. All around him the thrashing of spawning fish continued.

From across the pond came a yell and he looked up and whistled in amazement, Jimmy was holding up a glimmering silver shape that seemed to reach from his shoulders to his knees. When weighed it proved to be the largest fish of the day . . . a 16 pounder.

A line of thunderheads loomed out of the afternoon haze as they guided their small boat down the creek to the bridge. The three of them, Phil Tant, Don Manley and Jimmy Osborne, had made the long trip from Clinton to the shallows of Lake Gaston several times in quest of carp. Until today, their efforts were unsuccessful, for the carp had waited unusually late in the spring to spawn. But now, the laughter and eagerness in their conversation, the boat laden almost to the gunwales with fish, gave ample proof that past failures were completely forgotten.

Don threw the last handful of ice on the fish and turned. "Say, we got any of that cheese and crackers left from lunch?"

"Nope, just sardines," Jimmy replied, shoving a flat tin toward him. Phil and Jimmy watched silently as Don, calmly and with great precision, peeled back the top and peered intently at the neat row of tiny, silver fish. At lunch, that day, while watching the other two devouring sardines, Don had emphatically declared that he would sooner bite the head off a carp than "eat a single one of those things." Now, as he bit into his fifth sardine Jimmy was still doubled over with laughter but Phil had recovered enough to gasp, "you know, when you look at 'em them things do look right much like little carp."

It had been a day of unusual happenings. ◆◆

Stem to Stern

BY ED JENKINS

• Public compliance with sensible boating laws and regulations is the foundation for an effective boating safety program. After all the boating laws have been enacted, safety literature distributed, and education courses completed, it is up to the enforcement officer to see that safe boating practices are observed.

The Wildlife Protector's main job while on boating patrol is to inspect boats for required safety equipment, boat registration, and to ensure that boats are operated in a safe manner. It is the officer's job to issue citations to boat operators who are in violation of the law. Discrepancies for which people receive citations are usually corrected before the boat is used again.

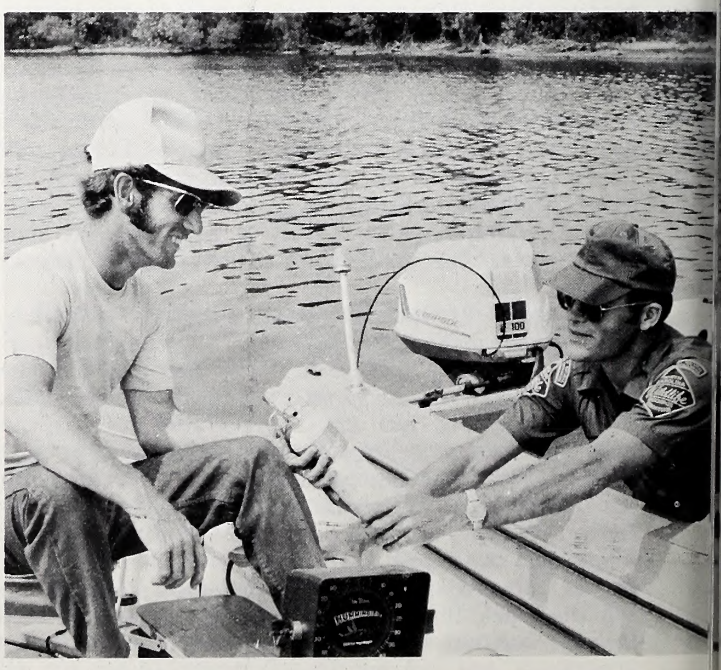
The Wildlife Protector's job on the water also includes conducting search and rescue operations and providing assistance to boats in distress. Most of the assistance provided consists of towing in disabled boats which are having engine trouble or which are out of fuel. However, every officer is also trained in first aid procedures and can provide such emergency assistance when needed.

Wildlife Protectors investigate boating accidents occurring on public waters of this state. These investigations consist not only of trying to determine responsibility for accidents but also identifying situations which may have led to the accidents. The officer's investigation may lead to special actions such as the placement of warning buoys on underwater hazards, notification to boat manufacturers of possible defects and even the enactment of local or statewide regulations designed to eliminate or reduce dangerous situations.

While inspecting boats, the officers will be checking for compliance with all game and fish laws as well as required boating equipment.

On a recent patrol of Lake Gaston with Wildlife Protector Mike Fulkerson, I found he was warmly welcomed by many fishermen as a source of fishing information when we stopped to inspect their boats. Mike was glad to inform them where most of the fish were being caught that day and what lures were producing the best results. He later told me "Most people understand our job and realize we are not trying to disturb them or interrupt their fishing any longer than possible. If I can help them out with any fishing information, I'm glad to be of assistance."

While there are those who are annoyed by the presence of a boating law enforcement officer on the water, most boaters recognize the need for these people just as they recognize the need for a highway patrol on our roads. Boating laws are safety standards designed to protect the lives and property of everyone enjoying our water, but in the absence of enforcement they would be totally ineffective in accomplishing the desired objectives. ▲▼



Wildlife Protector Mike Fulkerson is on water patrol. The day may include anything from a rescue operation to simply keeping check on normal boating activities. Accident prevention by inspecting safety devices such as this fire extinguisher, is much more pleasant than dealing with disaster. Won't you help them to help you?

PHOTOS BY ED JENKINS

NORTH CAROLINA'S

DUCK HARVEST

THE U. S. Fish and Wildlife Service has published the results of its national waterfowl harvest surveys for the 10 hunting seasons, 1961-1970. Special Scientific Report—Wildlife No. 187 entitled, "Distribution in States and Counties of Waterfowl Species Harvested during 1961-1970 Hunting Seasons," contains significant information that should be of interest to North Carolina sportsmen and have management values for wildlife professionals.

The waterfowl harvest estimates were derived by combining information from three primary sources: sales of duck stamps; averages of hunters' daily bags as reported by hunters on a mail questionnaire; and the number of waterfowl wings and tails received from hunters in response to the Service's Waterfowl Parts Collection Survey.

A portion of the statistics presented in the report have been summarized in the following tables. Although kill figures were given for all 100 counties, only the kills for the top 10 counties have been presented here.

TABLE I. Average Annual Harvest of Ducks in N. C. for the 10-Year Period, 1961-1970.

DABBLING DUCKS

Rank	Species	Number Harvested
1.	Wood Duck	22,059
2.	Mallard	11,229
3.	Black Duck	10,465
4.	Widgeon	9,276
5.	Green-winged Teal	6,764
6.	Pintail	4,855
7.	Gadwall	2,305
8.	Shoveler	1,255
9.	Blue-winged Teal	202
10.	Fuluous Tree Duck	15
	Total	68,441

DIVING DUCKS

Rank	Species	Number Harvested
1.	Ring-necked Duck	5,695
2.	Lesser Scaup	4,928
3.	Bufflehead	3,773
4.	Hooded Merganser	2,372
5.	Ruddy Duck	1,831
6.	Canvasback	1,605
7.	Greater Scaup	933
8.	Redhead	766
9.	Red-breasted Merganser	635
10.	Common Golden-Eye	207
11.	Surf Scoter	107
12.	Black Scoter	78
13.	Common Merganser	30
14.	White-Winged Scoter	28
15.	Old Squaw	19
	Total	23,007

TABLE II. Ten N. C. Counties Ranked According to the Average Annual Harvest of Ducks, based on Harvest for the 10-Year Period 1961-1970.

Table I clearly shows that the wood duck is the single most important species of waterfowl for the North Carolina duck hunter, the kill being twice as great as the next most important species—the mallard. The black duck ranks a close third. These three species comprise 64 percent of the total average annual kill of dabbling ducks and 48 percent of all species of ducks. The ring-necked duck ranks first amost the divers, followed by lesser scaup and bufflehead.

Table II confirms that Currituck County is the undisputed one in 100, ranking first in kill of both dabbers and divers.

Of unusual interest is the relatively high rank of several "inland" counties, i.e. Columbus, Robeson and Jones, which is attributable to exceptionally large kills of woodies. One Piedmont county, Guilford, ranks high in the harvest of diving ducks; this being comprised largely of ring-necked ducks.

by Stuart Critcher

TABLE II

County Rank	Total Ducks: County	Total Ducks: No. of Ducks Harvested	Dabbling Ducks: County	Dabbling Ducks: No. of Ducks Harvested	Diving Ducks: County	Diving Ducks: No. of Ducks Harvested
1.	Currituck	19,187	Currituck	14,793	Currituck	4,394
2.	Dare	8,983	Dare	7,590	Pamlico	3,013
3.	Pamlico	5,500	Columbus	2,804	Craven	2,484
4.	Craven	4,812	Robeson	2,566	Carteret	1,679
5.	Columbus	3,186	Pamlico	2,487	Dare	1,393
6.	Carteret	2,832	Craven	2,328	Guilford	1,193
7.	Robeson	2,693	Hyde	2,215	New Hanover	1,100
8.	New Hanover	2,563	Jones	1,862	Beaufort	1,084
9.	Hyde	2,549	New Hanover	1,463	Brunswick	748
10.	Beaufort	2,350	Onslow	1,392	Onslow	656

Help for a HOUSING SHORTAGE

By Frank Jeter, Jr.
USDA Conservation Service

A group of wildlife enthusiasts in North Carolina's populous Piedmont is trying to do something about the housing shortage.

But the shortage that these public spirited citizens are working on happens to be a very specialized one. They are trying to provide housing for the wood duck — the leading variety of nesting duck in North Carolina, and the most popular duck in North Carolina.

The project is succeeding, with well over a hundred boxes built and erected in six Piedmont counties — Alamance, Caswell, Chatham, Guilford, Orange and Rockingham. The sponsors are also making ambitious plans for the future.

Most of those involved are members of the RC&D Wildlife Committee of the North Central Piedmont Resource Conservation and Development (RC&D) Project. State and federal agencies are also providing assistance.

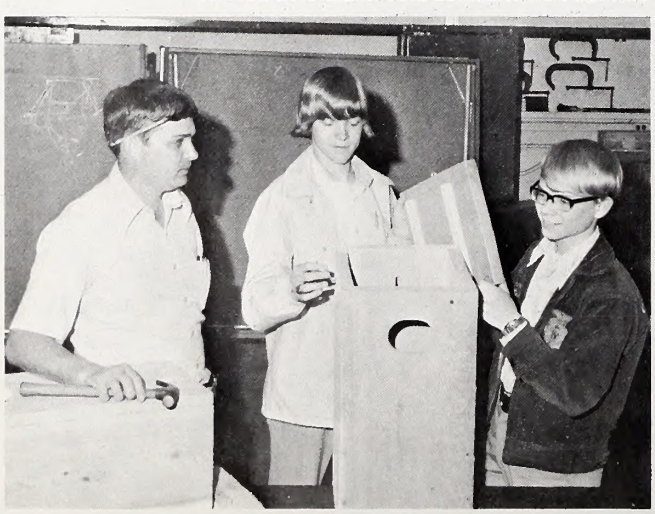
Specialized Housing

Wood ducks, when the time comes to nest and hatch a family, have very specialized housing needs. Their natural nest will probably be a hollow tree, perhaps provided earlier by a pileated woodpecker which will enlarge a natural cavity in the tree. But just a hollow place is not enough. It must also be near water — some believe "the closer the better" — although the wood duck will nest a few hundred feet from water.

With increasing encroachment of human beings, such hollow trees are getting as hard to find as a four-bedroom human habitation for less than $25,000.

Vocational agriculture teacher J. W. Busick, left, supervises Greg Holland, center, and Ronnie Whitsell as they construct wood duck boxes out of heavy cypress. Members of the Western Alamance FFA Chapter, they sell the boxes for $5.00 each.

PHOTOS BY U.S.D.A. SOIL CONSERVATION SERVICE



Even woodland is getting "urbanized" to an alarming extent.

Fortunately, the wood ducks will readily transfer nesting activities to a man-made box and thrive in such boxes.

J. W. Busick, the full-time vocational agriculture teacher at Western Alamance High School who is also — in his spare time — chairman of the RC&D Wildlife Committee, was one of several people who became concerned about the lack of habitation for the wood duck.

In 1974 the idea gained momentum. Besides Mr. Busick, prime movers were District Wildlife Biologist Harlan Hall and his successor, Randy Porterfield of the North Carolina Wildlife Resources Commission (NCWRC); David Combs, RC&D Project Coordinator with the Soil Conservation Service (SCS); and SCS District Conservationists from the six-county area. Many members of the Wildlife Committee were also in local Wildlife clubs. For example members of the Sportsman's Wildlife Club and Guilford Wildlife Club installed 35 boxes.

Project Voted

In August, 1974, the RC&D Wildlife Committee voted to go ahead with a project of building and installing a large initial supply of duck boxes. Since potential habitat for wood ducks is abundant in the Piedmont, the initial goal was more than a hundred boxes.

Under the leadership of their adviser, J. W. Busick, the Future Farmers constructed 121 duck boxes. The FFA chapter raised money to buy heavy cypress lumber by holding barbecue dinners. (They were later reimbursed by the RC&D Wildlife Committee.) The entire project involved some 65 students, including 10 girls.

The boxes are a marvel of construction. The cypress wood is resistant to damage by water or weather, and each box — two feet tall — is built of one-inch lumber, in a very sturdy fashion. The wood is deliberately left rough to simulate nature and to provide a suitable climbing surface for the little wood ducks when they leave the nest.

Predator Protection

Randy Porterfield of the Wildlife Commission provided technical assistance on proper installation of the boxes. Although wood ducks usually hatch 10 to 15 ducklings, only five or six survive because natural enemies abound. Snapping turtles, raccoons, snakes, large fish and other predators eat the little ducklings, which leave the nest one day after hatching. Predators often devour the eggs before hatching. To protect the nests inside the boxes, metal or heavy plastic guards may be nailed around the tree or post

Participation in the Resource Conservation and Development Projects over the state is open to any interested person. What about your area?

below the box, making it difficult to climb to the nest.

The goal is more ambitious for the year ahead; at least 200 more duck boxes for the six-county area are planned. Financing is planned by the North Central Piedmont RC&D steering Committee.

Once built, the boxes will be sold to landowners at cost — $5 each. This can become more of a bargain, because the N. C. Wildlife Resources Commission will reimburse an organization with $2.50 for each box that is properly erected and inspected.

(As with all programs of the U. S. Department of Agriculture, participation in this project is available to everyone without regard to race, creed, color, sex or national origin.)

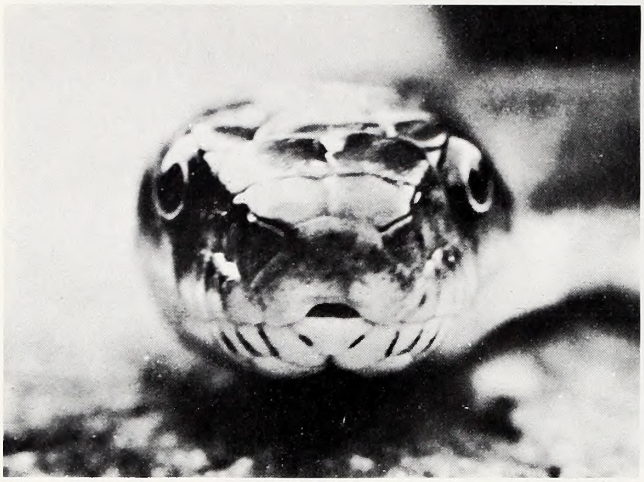
FFA Adviser Busick considers construction of the boxes, and all the work with the program, as a "very beneficial learning experience for young people." He finds interest "very high" among all the girls and boys in his three classes in outdoor recreation and applied ecology. "They are really learning something about the leading duck in North Carolina — its habits, its needs, and what it means to the people of our state," says J. W. Busick. " It gives the students a 'hands on' situation, a real experience in environmental education, that they never had before."

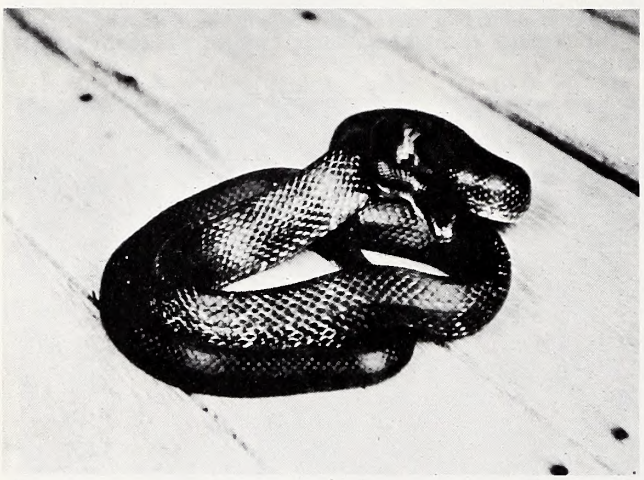
For the wood ducks, the program is helping to solve their housing shortage and providing a means to hatch a family.

For the wildlife enthusiast, it is upgrading the wildlife habitat and may lead to better hunting in future years. ⬍⬍

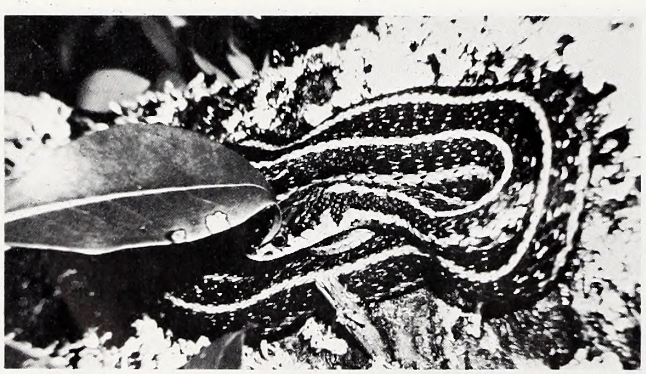
Bill Coe, manager of the Guilford Wildlife Club, prepares to check a duck box erected in cooperation with the project of the Wildlife Committee. North Central Piedmont RC&D project.

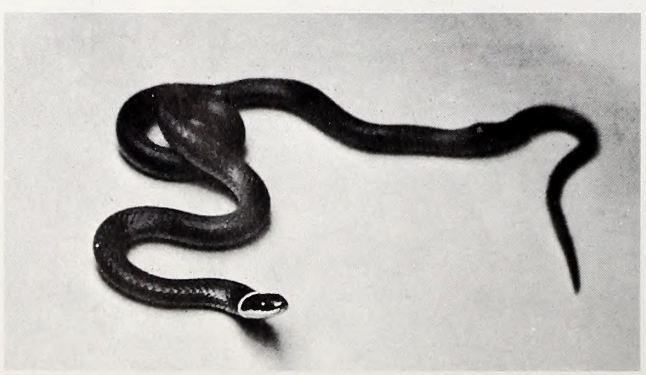
Jerry Fonville, secretary-treasurer of the Wildlife Committee of the Project, looks at a box placed at the water's edge of his Alamance County Farm. Metal sheathing prevents predators from climbing pole.





The black rat snake (top and above) helps control small rodents. They will take young birds and eggs, but are harmless to man. The common garter snake (below), like most snakes, avoids people. It eats frogs and toads. The little ring-necked snake (bottom) feeds on earthworms, small salamanders and insects.





SNAKES:

What Danger Lurks

by
Irvine D. Prather
and
Richard N. Conner
Department of Biology, V.P.I. & S.U.
Blacksburg, Va.

ARMED with a sinister countenance, and a six-foot list of misconceptions and wives-tales, the snake is a frightening creature. Said to charm birds and rodents, beguile young children, and kill for the sheer joy of killing, the snake has symbolized evil and embodied terror throughout the ages. Since the time of Adam and Eve their bad name has caused them to suffer at the end of countless rakes and shovels. However, to the person armed with a little knowledge and common sense, snakes may be as fascinating as others find them frightening. Admittedly poisonous snakes pose a danger near areas of high human use and therefore should be controlled, especially where children are apt to be present. But in the forests, hunters and fishermen familiar with snakes and their habits, can make it easier on both themselves and the snakes.

Snakes are covered with scales which differ somewhat with species. Basically, scales may either be smooth (completely flat all over) or keeled (having a central ridge extending the length of the scale). The scales are dry and tough, protecting the snake from dehydration and physical injury. The head is covered by a series of modified scales called plates. The number and arrangement of plates is an aid to species identification. A snake's underside is also covered with modified scales. These are called scutes and assist the snake in locomotion.

Certain snakes hunt for their food either at night, or during periods of reduced light. One adaptation supporting this life-style is seen in the eyes. The sight transmitting cells in the eyes of vertebrate animals are of two types, rods and cones. These cells, comprising the retina, respond to light and color respectively. The eyes of these snakes are composed of many more rods than cones. Thus they are capable of seeing better at low light intensity, but cannot easily distinguish color. Other snakes, active during daylight hours alone, have only cones in the retina of their eyes. These snakes have color vision and excellent visual acuity which aid in detection and capture of prey. In North Carolina, the nonpoisonous snakes have round eye pupils while the poisonous snakes have elliptical, or catlike pupils. An exception to this general rule is the coral snake. a member of the cobra family found in eastern North Carolina, which has round eye pupils.

To say that the poisonous snakes aren't dangerous perhaps is misleading. But to exterminate them because of this remote possibility is just as extreme. Rattlesnakes, like this timber, will strike when molested and will bite anything it feels is endangering it. Caution certainly should be exercised by anyone traveling in poisonous snake territory.

Snakes rely heavily upon the sense of smell. This they accomplish with their tongue. The familiar forked tongue, when extended, picks up minute particles in the air. When the snake withdraws its tongue, the tips are inserted in two small pockets located at the back of its mouth. These are called Jacobson's organs and are the receptors for the sense of smell.

Although snakes have no external or middle ear, they can hear. A small bone extending from the lower jaw transmits sound vibrations from the ground and the air to the inner ear. For certain frequency ranges, the hearing of many nonpoisonous snakes is more acute than that of a house cat.

All snakes are cold-blooded and need to sun themselves for warmth. When the temperature drops severely during the winter season, snakes become lethargic and hibernate in small caves and crevices. These winter dens usually house different species of snakes. Copperheads and timber rattlesnakes are commonly discovered leaving the same den in the Spring.

North Carolina's nonpoisonous snakes destroy many unwanted rodents on farms and in towns. Killing snakes is useless and wasteful. The black rat snakes, like most nonpoisonous snakes in North Carolina, kill by constriction. They wrap coils of their body around their victim and squeeze tighter each time the prey exhales. Death results from suffocation. Other nonpoisonous snakes, like the harmless ringneck snake and garter snake, stalk and capture insects and other small invertebrates which are usually swallowed alive.

Of all the species of snakes in North Carolina, only five are poisonous, the cottonmouth (found around the wetlands of eastern North Carolina), the copperhead, the coral snake, the timber or canebrake rattlesnake,* and the diamondback rattlesnake. These poisonous snakes obtain food by what may be consideres a bizarre method. With the exception of the coral snake, all are pit vipers and have small openings (pits) located near the nostrils which are sensitive to infrared, or heat. They can detect warm-blooded animals solely by the heat of their bodies. Eyes, pits, and the sensitive tongue are all used to locate prey. The pit viper then strikes and injects venom, a mixture of poisons, into its victim. The hemotoxins, making up the bulk of the venom, cause severe internal hemorrhaging, while the neurotoxins impair the nervous system and hamper breathing. Other components of the venom include enzymes that begin to digest the victim even before the snake swallows it. After the prey is bitten, the snake follows it, using its forked tongue to sense the trail. After being found again, the animal is swallowed whole.

Poisonous snakes found in extensive forested areas should be left alone. Hunters, hikers, and fishermen who attempt to kill a rattler or copperhead are often bitten in the process. There, common sense is needed. If the snake is far from human dwellings, in its natural environment, why kill it? Its chance of harming anyone is remote.

When a human is bitten it is usually a defensive action on the part of the snake. Most people are not careful where they walk, put their hands, or sit down. About 95 percent of poisonous snake bites are on the ankles and hands. The other 5 percent are usually on the rump. When you go into the field watch where you walk. Copperheads are often found in brush piles while timber rattlers favor dry areas with an abundance of exposed rocks and low brushy vegetation. Take a snake bite kit and go with a friend (be sure to have read the directions on your kit). Wear high boots and drape your pants on the outside of the boots, thus lessening the chance of the fangs penetrating.

Even though you obey all the rules, the possibility of getting bitten still exists. If you are bitten, there are several things you should and should not do. Use the snake bite kit *as directed* and with the aid of your companion get to a medical facility where anti-venom serum is available. *DO NOT* drink any alcoholic beverage! Avoid strenuous exercise, if possible. Alcohol and exertion only help spread the poison to the rest of your body. Few people will actually die from the bite of a copperhead, even if they do not receive medical treatment. A rattlesnake bite is a bit more serious.

Poisonous snakes, though potentially dangerous, are a part of North Carolina's fauna and a needed component of the ecosystem. Unless discretion is used by us all, we may eventually lose these unique reptiles.

---

* Most authorities now consider the timber and the canebrake color phases of the same snake.

Recording Nature's Sounds

by
Dwight L. Peterson
Clinton

Photos by the Author

FOR reasons born from gas prices and other worldly economic pressures, my family and I are thinking more on a "restricted basis" and taking advantage of outdoor activities closer to home. With our thinking somewhat cramped in a thimble, it has been interesting to realize how certain everyday deeds and hobbies can be leads to ideas for other outdoor activities. It was such an idea that hit my feeble mind somewhat over a year ago when I was replenishing the bird feeder supply.

The little feathered geniuses were chirping from every tree and bush in the yard. Maestro, the mockingbird, was doing his thing and playing boss of the tree branches. "It would be nice to capture these sounds," I thought. My brain then did a flip with . . . why not? It was as simple as that.

So, with the inexpensive cassette tape player/recorder I use to help organize notes, ideas and thoughts for the outdoor articles I write, my family and I began a delightful journey into the world of recording natural sounds. I suppose the main advantage concerning recording nature's sounds is that it can be done as a family unit. But this is only one of the many advantages. It can be an added pleasure to a camping trip, a hiking venture, Sunday afternoon strolls, or just plain and simple home entertainment. It is, or can be, a new outdoor adventure that is enjoyable as well as educational.

It is surprising how many fascinating sounds can be found in the mild and wild natural world. For example, use your imagination and think of the various sounds rain can create by striking different objects: metal, fabric (like a tent), and even water itself; the gentleness of a waterfall in a woodland brook compared to the roar of a giant falls; rain dripping from a roof or falling into a rain puddle. In another line of thought, think of the whisper and moans of wind in the pines. If you get a ghostly feeling on a windy night, you might like to record the haunting sound of wind howling in the gables or around the corner of your house.

WHEN recording, you should remember you are not in a soundproof recording studio. Much of the time you will be in the wide open space of a man's world; planes overhead, cars, slamming doors, barking dogs, roars from motorcycles and chain saws. You name it, it's there. The strange thing about this is, we are so accustomed to these sounds we have become unaware of them. They are merely a part of our world and we accept them subconsciously, I suppose. This is not so much a problem when in the wilds, but even there, civilized sounds reach us. There may be times when you have no other choice, but when you can, try to keep these sounds out of your recordings.

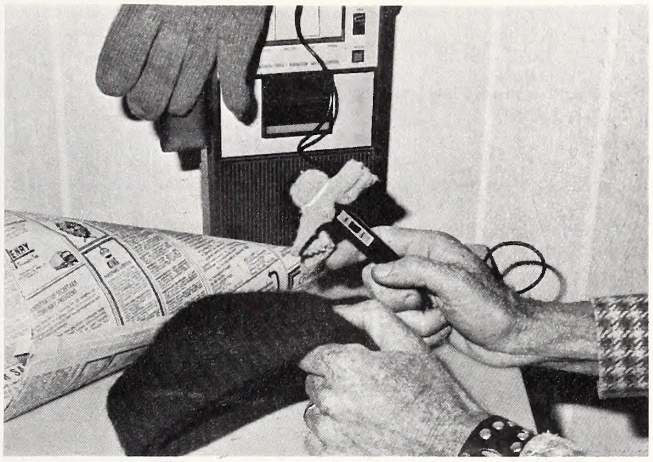
I am not a recording expert; far from it. But this thought brings up an important point. That is, not being an expert creates an experimental curiosity. You come up with simple ideas and tricks to improve your recordings. It adds an air of intrigue.

One idea you might like to try is funnels. The purpose of the funnel is to center, or funnel, the desired sound into your mike. In most cases, the sound will be slightly magnified. Think in the reverse of a megaphone and you have the idea. You can come up with many different tricks, but to begin, you might try tops cut from plastic bottles and jugs. Also, poster paper or pages from a newspaper rolled into a funnel shape. Be sure the base end fits snug around your mike (receiving end). Tape the funnel to the mike to prevent slipping. Another point in favor of funnels is that they help shield out certain interfering side noises, to some extent.

When recording in the wind your first tape might be a disappointment — that is, if you are not prepared. Wind blowing into and around your mike will cause a frying roar on your tape that sounds like a gigantic forest fire. A fabric covering placed over the mike will prevent this, and they can be easily made at home. Knitted material works fine; the top of boot socks, fingers or other portions of knit gloves, and thick knitted watch caps. If the item is discardable, cut a piece that will fit over and around the receiving end of your mike. Bind this with a rubber band and you are ready to go.

Another project you might like to try is the blending of different nature sounds. To be honest, I haven't been very successful with this endeavor. But my idea is to load separate cassette players (they need not be recorders) with your prerecorded nature sounds. Next, load your cassette recorder with a **blank** cassette tape. Place the players around your recorder mike. Amplify or fade different sounds by adjusting the volume control of the players. Or you may prefer to vary the distance between the players and recorder for the same effect. Recording should be done in the quietness of a room with doors and windows closed. To help muffle

Displayed here on camouflage material which serves as concealment, is a handy pen light (right), the tape recorder and microphone, and headlamp attached to a hunting cap, and battery. Experimentation will help determine the necessary volume for various sounds and conditions.



A funnel made of newspaper helps center sounds in the microphone. Knitted gloves, a thick watch cap, or portions cut from knitted socks (shown cupped over the microphone's end) afford some protection from wind's distorting sounds. Practice will show you what not to do "next time."

unwanted operational noises, wear gloves and the equipment can be set up on a table covered with a towel or similar material. You should be able to come up with many ideas concerning this project, but I merely offer the suggestion.

Actually, the **natural** blend of different nature sounds will be your most prized possesion. Some of my most cherished cassettes are those taped during the early morning and late evening hours of a fresh spring day. The best location? There are many to chose from. For instance, an area of woods with a pond or stream, and maybe a ridge rolling up on one side dotted with hardwoods is ideal. All, hopefully, are away from many civilized noises. A small marsh area bordering the pond or stream will add a well balanced habitat for a variety of wildlife. Here you can sit in the warm spring sun, close your eyes, and soak up those wonderful sounds of nature as your tape captures them for later enjoyment.

IN a way, recording nature's sounds is similar to nature photography and preparation is much the same. Or do both at the same time; I often do. Blinds for concealment will be necessary, at times, as well as a knowledge of your subject. Take the owl as an example. By knowing your subject you will know your best recordings can be acquired at night when most owls are active. A knowledge of the species will inform you where to go, such as deep woods and swamp for the barred and great horned owls. This will entice the use of a nature reference source, which is an added educational advantage.

Equipment while afield can be as unsophisticated as you want to make it. My own is usually as simple as the recorder. Other times, depending upon the situation, I might carry a piece of camouflage material, a light for night work (the headlamp is very good — you have both hands free), and a pocket pen light. The pen light is small and you will find it useful for quick checks of your tape, hookups and numerous other duties. Also consider extra tapes and batteries.

Another thought to consider is a voiced-in identification of the sound you are recording. This is easily accomplished if you know your subject(s) before you begin recording the actual sound. If not, voice-in the identification at the end of the recording or later, at the beginning of the recording, when identification is learned. You should remember, however, that a later identification at the beginning of your recording will erase (as you record your voice) a part of the sound previously recorded. After you have made several tapes it is my feeling that you will enjoy making a tape without any identification of subjects. This makes a good guessing game tape for entertainment around a campfire, or at home with family and friends. Clear, singular sounds are best for this since each species of wildlife can be identified without confusion. Example method: Voice-in the number **one** on your tape. Record the sound, such as a crow, for one minute. Jot the No. 1 in a notebook and label it as being the crow. Follow the same procedure, maybe a hawk, for No. 2, etc.

When making your recording, point the mike directly toward the sound. Try not to move around either the mike or the recorder while you are recording. With some recorders the movement of connections and wiring often (not always) creates popping or static type sounds on your tape. This is also true when you flip the mike switch to the "on" or "off" position. On most recorders a "clucking" sound will record on your tape mimicking the operational maneuver.

THE mike is very sensitive. Usually, what you are hearing while recording is being picked up by the mike and transferred to your tape. You will soon learn the slightest bump of the mike against an object, such as a limb, will record. This is one disadvantage of the funnels I mentioned earlier. They must be secure, with no wobble. A wobbling funnel, especially the wobbling crinkle of paper, will record.

There are favorable features you should look for concerning cassette player/recorders. First in the minds of most would be price. Good units can be purchased from about $30.00 to a little less than $50.00 (at this writing). As you go down from this price you begin to lower quality and forfeit desirable features. Next would be portability. That is, a unit which will operate on battery or AC house current. This is usually called dual power capability. The remote control microphone (mike), rather than the built-in type, with a cord of four

• **continued on page 27**

- Letters
- Comments
- This & That

BACK OF THE BOOK

● Mention the National Rifle Association to any group that has widely varying interests and you're almost certain to hear the pros and cons for this organization discussed hotly and at length. It's been that way ever since the issue of gun control became a serious topic for consideration during the past half dozen years or so.

The National Rifle Association has been in the thick of this debate from the beginning, and depending upon your point of view, the NRA is either the best hope for retaining a valid and necessary constitutional right to keep and bear arms for personal protection and sporting uses or it's a radical group of gun-toting kooks.

It is doubtful that there are many people who have no opinion on this subject, but it is highly likely that lots of people have not yet lent their full support to either side.

If you're one of millions who believe that highly restrictive gun registration and control might ultimately lead to widespread gun confiscation, and if you are leaning towards the belief that such control is contrary to your constitutional rights, then maybe it's time you took some postive action.

Chances are if you are a hunter, target shooter or collector, your opinions on gun control are relatively predictable. On the other hand, it could be that you fall into neither of these categories, but still believe that gun ownership by sportsmen and individuals who want to protect their homes is a valid right. Perhaps you suspect that gun control would not only be unenforceable, but actually put guns only in the hands of criminals. Maybe you feel that misuse of guns by a certain element of the population is a necessary price one pays for living in a free society.

In that case, the NRA is probably your most effective ally even though you might disagree with some of its ideas. Few would question the fact that without the efforts of the NRA, we would all be under far more stringent gun control laws than now exist.

Because the battle over gun control is a hot issue—and shows no signs of abating—the NRA is seeking the help of those who generally support their contention that gun control is not a workable or fair solution to the problems of armed crime or accidental death by shooting.

Currently, the NRA is conducting a drive to gain new members. Already, the NRA has over one million active members, but would like to increase its strength this year by at least another 100,000 members.

"We intend to increase the size of the NRA by ten percent," says General Maxwell E. Rich, NRA executive vice-president. "This kind of rapid growth is understood in the Congress, by the press and certainly among the citizens of our nation."

Those who would like to learn more about NRA, or if you wish to join, you may do so by writing the National Rifle Association of America, 1600 Rhode Island Avenue, Washington, D. C. 20036. ⬍⬍

Wildlife Promotions Announced

Two promotions and a retirement were announced July 21 by the N. C. Wildlife Resources Commission. Richard B. Hamilton, chief of the Division of Game, was named to replace retiring Eugene E. Schwall as Assistant Executive Director of the Wildlife Commission in charge of administration.

Clifford L. Bampton, supervisor of the western Game Lands program, was named chief of the Division of Game, replacing Hamilton.

Hamilton, age 30 and a native of Richmond, Va., will assume duties as of Aug. 1, 1975. He is a graduate of N. C. State University with a B.S. degree in Wildlife Management. He received a master's degree, also from State, in 1968. Hamilton joined the Commission as a game biologist in 1970, was appointed assistant chief of Game in 1972 and was named chief of the Division of Game in 1974.

Bampton, 38, is a native of Connecticut. He came to the Commission in 1962 as a game biologist and was named supervisor of western refuges in 1963.

Schwall announced his retirement after serving with the Wildlife Commission since 1948. He joined the Commission as leader of the statewide small game program, then became Federal Aid Coordinator for the Division of Game. He was later named chief of the Division of Game and became the assistant executive director in 1952. In 1969, he became assistant director in charge of administration.

"For almost 40 years, 27 years in North Carolina, I have devoted my time and energies to wildlife management and to the conservation of our natural resources," said Schwall. "I have enjoyed every minute of this service and leave active duty with mixed feelings. I shall forever cherish the association of fellow employees and the many friendships developed through the years."

Tide Tables for Rail Hunters

If you are planning a marsh hen hunt this season, this table of high tides should help in hitting the right times. Clip it for future reference. Listed are the high tides for Southport (Pivers Island and Shallotte Inlet are approximately the same). Add one hour to correct to Daylight Saving Time.

Sept.	Day	Time (E.S.T.)	High Tide (ft.)
3	W	5:44 PM	5.2
4	Th	6:37 PM	5.4
5	F	7:08 AM	5.1
5	F	7:28 PM	5.5
6	Sa	8:01 AM	5.4
6	Sa	8:19 PM	5.4
8	M	9:44 AM	5.6
9	Tu	10:38 AM	5.4
10	W	11:35 AM	5.2
11	Th	12:33 PM	5.0
Oct.			
1	W	4:21 PM	5.0
2	Th	5:19 PM	5.2
3	F	5:52 AM	5.2
4	Sa	6:47 AM	5.5
4	Sa	7:06 PM	5.4
6	M	8:32 AM	5.9
7	Tu	9:24 AM	5.8
8	W	10:18 AM	5.6
9	Th	11:10 AM	5.3
10	F	12:08 PM	5.0
Nov.			
3	M	7:21 AM	5.9
4	Tu	8:13 AM	5.9
5	W	9:05 AM	5.7
6	Th	9:54 AM	5.5
7	F	10:46 AM	5.1

PHOTO BY JIM DEAN

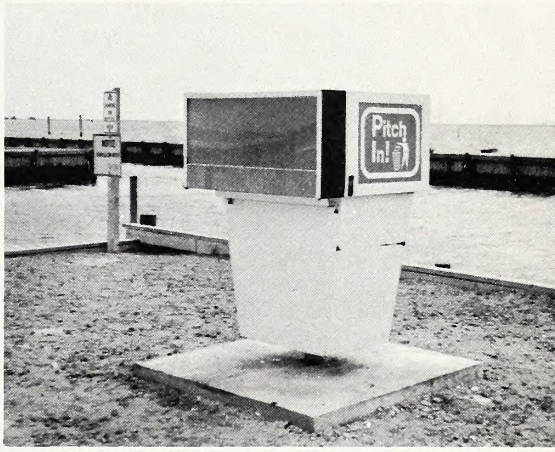
Three new wildlife Commissioners, appointed by Governor James E. Holshouser, Jr. were sworn in by District Court of Appeals Judge R. M. Martin (standing, second from left) during the Commission's July meeting. Dewey W. Wells (left) of Camden replaces Orville Woodhouse, in Dist. 1; Henry E. Moore, Jr., (right) replaces D. Jack Hooks in Dist. 4; and William C. Boyd of Winston-Salem, replaces Dr. Lathan T. Moose in Dist. 7.

Pitch-In

The Wildlife Resources Commission in cooperation with the North Carolina Beer Wholesalers Association has instituted a pilot program of installing the familiar road-side "Pitch-In" containers on some of the boating access areas. Twelve of these containers were furnished to the Commission at no cost by the North Carolina Beer Wholesalers Association and these have been installed on selected access areas throughout the state.

These "Pitch-In" containers have been installed for the convenience of boaters using the area for deposit of litter. They are not intended for the deposit of household trash and garbage. Unfortunately, one container has had to be moved from its initial installation due to the repeated deposit of excessive amounts of household garbage and trash.

If this initial program proves to be successful and provides a convenience to the boating public, it is hoped that additional containers can be obtained and installed at other access areas.



RECORDING
from page 25

to five feet is almost a necessity. Other features to look for are; (1) erase prevention, (2) automatic level control, (3) separate controls for volume, tone, record, play, rewind, fast forward and stop (off). A dial indicating battery strength is also useful.

Reasons explaining the **why** of recording nature's sounds can be many. I am sure you will have your own. It offers a challenge but can be considered a simple pleasure. My family and I simply enjoy making a recording and sitting around the dining room table and playing it back. Another reason might be for the purpose of acquiring the ability to recognize a species of wildlife by sound, without seeing. It is inexpensive, and that is important today. I have a feeling I am recording a natural sound that may never again be available to me . . . or anyone.

• MARTIAN
from page 7

"Hold it. Okay, if there's no saw, we'll have to use something else." All eyes were on me, waiting for the "something else." But I didn't know what else to use. My tool inventory was pitiful. There was a crowbar somewhere . . . . the sling blade . . . no. Then I realized something. Stooping a bit, I shot the flashlight beam into the box. The leftenant's legs were bent at the knees.

"Stand up," I said.

"Wot?" he growled.

"Stand up. Plant your feet and push." Grudgingly, he did and, to his own amazement, stood erect, if wobbly. The sides of the box were at least eight inches from the ground on all sides. He took a step or two. The box was cumbersome, but not that heavy.

"There, now," I beamed. "You can walk up to the house with us, and we'll call one of our neighbors. There's a guy a short distance from here who owns a saw." We gathered in the harness and parachute, and wrapped it about the commando as best we could, then began the slow procession back to the house. I was explaining that, if my neighbor's saw wouldn't do, we would call the Vass Rescue Squad. They would have tools. As we neared the back porch, the leftenant, who had been silent, stopped and tapped my shoulder.

"Say, myte," he said thoughtfully. "'ow far are we from th' Fort Bragg Reservation?"

"Why, just a few miles. Look there," I said, pointing East, "you can see they're still at it. See the red lights flashing in the sky?"

"Hmm." He raised his eyebrows and stared out over the rolling woods.

"Thanks, myte. Tell y' wot. I'll be off, now. No need t' bother y' neighbors 'n' all o' that. Just point me right, and I'll make me way."

"Box and all?"

"Box and all." He was still staring at the lights.

"But it's just a short . . . ."

"Y'see myte, this could get ruddy embarrasin', wot with me getting' snared in a rabbit trap and all. There's some wot wouldn't understand the circumstances, y' know." I began to get the message.

He shot me a side glance, grunted, and shoved off across the pasture. We watched until he made the woods about 200 yards away. The boys were scrowling.

"Well, that's that," I said.

"No it's not," Tom growled.

"What's that mean?" I asked, as I looked at the boys who were glaring at the spot where the cammando had disappeared. Tim answered:

"He took our bloody rabbit trap."

PHOTO BY JOEL ARRINGTON

Fall Brown

There's something about the first trout of the season and the last one that sets them apart from all the rest. Of course with North Carolina's long trout season (closed only during March), weather may be the only thing that "closes" it.

STATLIBR* 1SAMPLE9999 1
DIV OF STATE LIBRARY *
109 E JONES ST
RALEIGH NC 27611

LITHO BY THE GRAPHIC PRESS, INC., RALEIGH, N. C.

15
39/10

Wildlife

IN NORTH CAROLINA

OCTOBER 1975

OCT 7 1975

North Carolina State Library
Raleigh

N. C.
Doc.

PHOTO BY LEONARD LEE RUE III

WHOOO'S THAT?

Often pictured as a creature of mystery and gloom, the great horned owl is really a rather regal character. Few more efficient hunters exist in nature, and their prey is made up of rabbits, mice and other small rodents that might get out of hand without this predator. All owls and hawks are protected by law.

An Equal Opportunity Employer

STATE OF NORTH CAROLINA

JAMES E. HOLSHOUSER, JR.
GOVERNOR

DEPARTMENT OF
NATURAL AND ECONOMIC RESOURCES
JAMES E. HARRINGTON, JR.
SECRETARY

NORTH CAROLINA
WILDLIFE RESOURCES COMMISSION

ROSCOE D. SANDLIN, CHM. – JACKSONVILLE
JAY WAGGONER, V. CHM. – – – – GRAHAM
ROY A. HUNEYCUTT, SECY. – – – – LOCUST
W. K. ANDERSON – – – – – – – NEWLAND
WILLIAM C. BOYD – – – – – WINSTON-SALEM
WALLACE E. CASE – – – – HENDERSONVILLE
HENRY E. MOORE, JR. – – – – – – CLINTON
DEWEY W. WELLS – – – – – – – – CAMDEN
V. E. WILSON, III – – – – – ROCKY MOUNT

CLYDE P. PATTON
EXECUTIVE DIRECTOR

RICHARD B. HAMILTON ROBERT B. HAZEL
ASSISTANT EXECUTIVE DIRECTORS

DIVISION CHIEFS

REX GARY SCHMIDT – – – – – – EDUCATION
CLIFFORD L. BAMPTON – – – – – – – GAME
W. DONALD BAKER – – – INLAND FISHERIES
DONALD E. CURTIS – – – – – PROTECTION
CHARLES R. FULLWOOD, JR. – MOTORBOATS
AND WATER SAFETY

The Editor gratefully receives for publication news items, articles, and photographs dealing with the North Carolina out-of-doors, but reserves the right to reject materials submitted. Full credit is given for all materials published.

Have you moved recently? Change your address promptly. Either send in an old mailing label from your magazine along with new address or type or print complete old label information exactly as it appears on your magazine.

WILDLIFE IN NORTH CAROLINA is published at the Wildlife Resources Commission offices, Albemarle Building, Raleigh, N. C.

Phone Number AC 919/829-7123

Second class postage paid at Raleigh, North Carolina 27611.

* * *

SUBSCRIPTION RATE — $2.00 per year (12 issues). Add $1.00 for overseas postage except APO, Canada and U. S. possessions. Back issues — $.25 per copy plus $1.00 minimum for handling and mailing; back issues may not be available. Send check or M. O. payable to WILDLIFE RESOURCES COMMISSION. Stamps cannot be accepted.. Any employee of the Wildlife Resources Commission may accept subscriptions, or send to WILDLIFE, Albemarle Building, 325 N. Salisbury Street, Raleigh, N. C. 27611.

Wildlife circulation this issue 68,146

Wildlife IN NORTH CAROLINA

The official publication of the NORTH CAROLINA WILDLIFE RESOURCES COMMISSION, Raleigh 27611. A monthly magazine devoted to the protection and restoration of our wildlife resources and to the improvement of hunting and fishing in North Carolina.

VOL. XXXIX NO. 10 OCTOBER, 1975

IN THIS ISSUE

Muzzleloaders for the Sportsman
by H. M. Tyus ..... Page 4

Tricky Target
by Frank Mooney ..... Page 6

The View from Charlie's Bunion
by Joyce Durham Barrett ..... Page 8

Fall Gobblers?
by J. R. Franck ..... Page 9

Silent Guides
by Dan Kibler ..... Page 10

Natural Bait or Artificials?
by Jim Dean ..... Page 11

Hunting Buddy
by Art and Joan Cone ..... Page 12

Doughton Park
by Chris Turner ..... Page 14

Conflict of Interest
by Mike Gaddis ..... Page 16

The Promise of New Hope
by Ted Dossett ..... Page 18

Anti-Hunting: A Wasteful Issue
by Ed Kozicky and John Madson ..... Page 20

Stem to Stern
by Ed Jenkins ..... Page 23

Resource-O-Gram ..... Page 24

Back of the Book ..... Page 25

EDITORIAL STAFF

DUANE RAVER – – – – – – – – – EDITOR
LUTHER PARTIN – – WRITER-PHOTOGRAPHER
JIM DEAN – – – – WRITER-PHOTOGRAPHER
TED DOSSETT – – – WRITER-PHOTOGRAPHER

An objective of all levels of government should be to achieve and sustain a balance of the social, ecological, and economic benefits derived from natural resources. Without such balance none of the factors on the scale will be worth weighing.

The American woodcock has an almost comical appearance and actually doesn't look like a game bird should at all. But as ungainly as they might appear, the timber doodle makes a tricky target as it rockets up from a moist mud flat. Seldom does the gunner get much time to think about his shot as the bird dodges the pole timber of the river bottom. But you'll have to wait until November 22 for the woodcock season. Painting by Duane Raver.

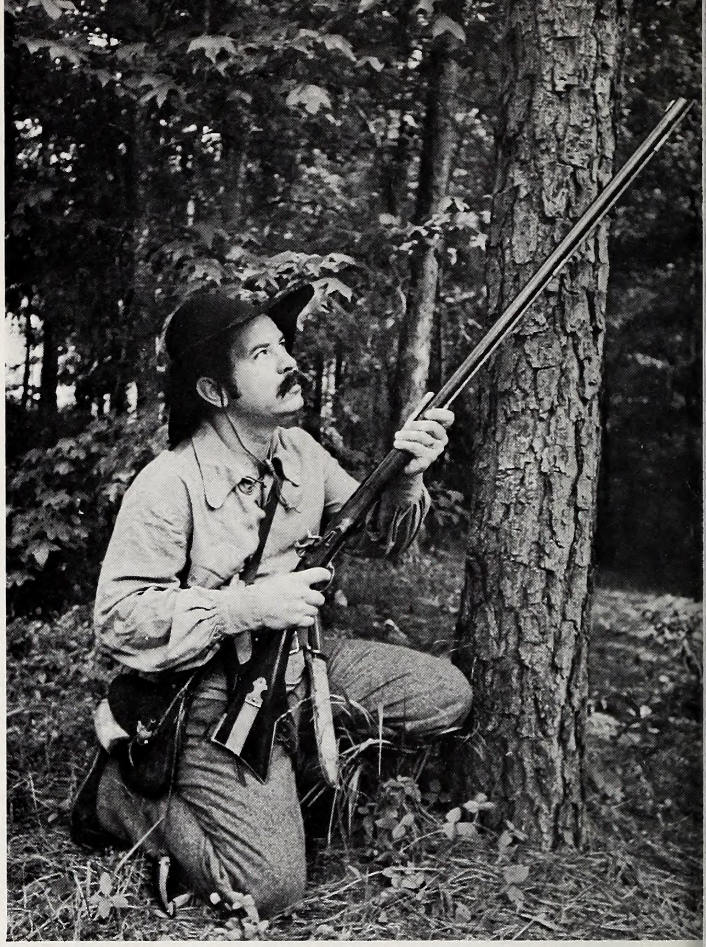
Muzzleloaders for the Sportsman

by H. M. Tyus
Photos by Jim Dean

NO matter who you are, you will become a better shot, a better hunter and sportsman when afield with an old style muzzleloading rifle with iron sights and one shot you have loaded yourself. You tend to hunt more cautiously and intently with a muzzleloader and take only a good shot at effective range. This is usually not a handicap, but rather an advantage in these days when game may be hard to take, and a few squirrels or a nice buck taken with ole' Betsey provides satisfaction most hunters seldom enjoy.

It is for these and many other reasons that the use of muzzleloading and other black powder guns has increased in popularity in recent years. Most states now offer special seasons and/or game land hunts for black powder hunters. The special three-day muzzleloading seasons adopted by the N. C. Wildlife Resources Commission (see page 14, of the current Hunting and Trapping Regulations) is similar to other such seasons in neighboring states, and I determined an article might be of interest to those who would like to take advantage of this season, but have no experience with black powder guns.

There is a wide variety of muzzleloading firearms available today, but I identify three main types: 1) flintlock rifles and muskets; 2) percussion rifles and muskets and 3) double shotguns and rifles. The only "primitive" weapon is considered to be the flintlock (rifle, musket, or fowling piece). Ignition for the main charge of black powder in the barrel enters from a small pan of powder through a hole in the barrel connecting the two. A piece of flint strikes a metal frizzen casting a shower of sparks into the pan and



The author uses a small caliber Pennsylvania flintlock rifle for squirrels. This type of "one shot" hunting requires patience and stealth. The flash of powder (lower left) in the priming pan of the flintlock sets off the main powder charge. Below are the accessories of the muzzleloader: patch knife (top), powderhorn with attached measure (right), priming horn, "possible bag," and Bowie knife.

sets the whole process off.

The flintlock shooter must have a steady hand because of the slight delay between ignition of powder in the pan and ignition of the main charge in the barrel. Also, there are other peculiarities akin to flintlock shooting which make it a real skill and makes such shooting truly a primitive sport. A "flash in the pan" can cause the elusive white-tailed deer to head for safer parts, so keep your touch hole clean.

With the invention of the explosive percussion cap, many flintlocks were converted to this new system. In this country, the familiar rifled musket of the Civil War is an example. Instead of firing a round, patched lead ball, such a rifled musket used a hollow based projectile (minie ball) which was greased and rammed down the muzzle. Ignition is instantaneous and a fast rate of fire is possible with this weapon.

The percussion cap likewise made possible the development of the well-known double barrel shotgun, and percussion guns were used by market hunters of the last century. During the last part of the Civil War, breachloading percussion rifles were developed using various types of paper, metal or rubber cartridges. Although these guns are not of modern design (there is no firing pan) and require a percussion cap, they belong in a special class all their own and hence are not truly muzzleloading firearms.

The sportsman would do well to select an original or preferably a new reproduction muzzleloading firearm of traditional design for those muzzleloading hunts. The old-timers perfected muzzleloaders and they knew what they were doing. So whether flintlock or percussion, use a fairly authentic gun. Let's face it, there is plenty of time left for those fancy modern high-powered rifles, and primitive hunting should be kept just that! The idea is to relax and enjoy the thrill and sport of hunting like our forefathers did. And, by the way, you may be a little vain and add to the fun by wearing that old slouch hat to match your powder horn, possible bag or flask. Nix on modern fatigues!

You can have a lot of sport shooting squirrels with a Kentucky flintlock as I do and its just the thing to sharpen the eye for deer season. My favorite squirrel rifle shoots a 35 caliber round ball and offers tons of challenge on a cold, frosty morn! Remember, only one shot so make it good.

Likewise whether rabbit, rail, dove, duck or quail is your specialty, try a double percussion gun for fun and economy. Remember, it is hard to beat the balance and beauty of those handsome old guns.

Alas, good old muzzleloaders are scarce these days. But really good news for prospective charcoal burners is that several reputable firms are manufacturing high quality reproduction or new muzzleloading guns! Although care is needed to shy away from some cheap guns, the hunter today can select from a variety of Kentucky rifles, rifled muskets and shotguns, all made as good or better than the originals. Good companies include Thompson-Center Arms, Navy Arms, and Lyman, as well as several firms making only Civil War muskets including Parker-Hale, Yeck, Harper's Ferry, etc. For those so inclined, a gun can be made from ordered parts. You can get all the needed parts including an inletted and shaped stock from Dixie Gun Works, Log Cabin Sport Shop or local sources. Beware of cheap kits of inferior quality.

If you have never hunted with a muzzleloader, by all means don't pass it up. Find a club or friend in your area, study a good handbook (the Lyman black powder book is good) written by knowledgeable writers and join the swelling ranks of muzzleloaders. Remember, have fun but **never, never** use anything but black powder.

Extreme caution should be used when loading muzzleloaders. Keep muzzle pointed away from body and use two fingers on the ramrod.

Popular Loads for Game (1)

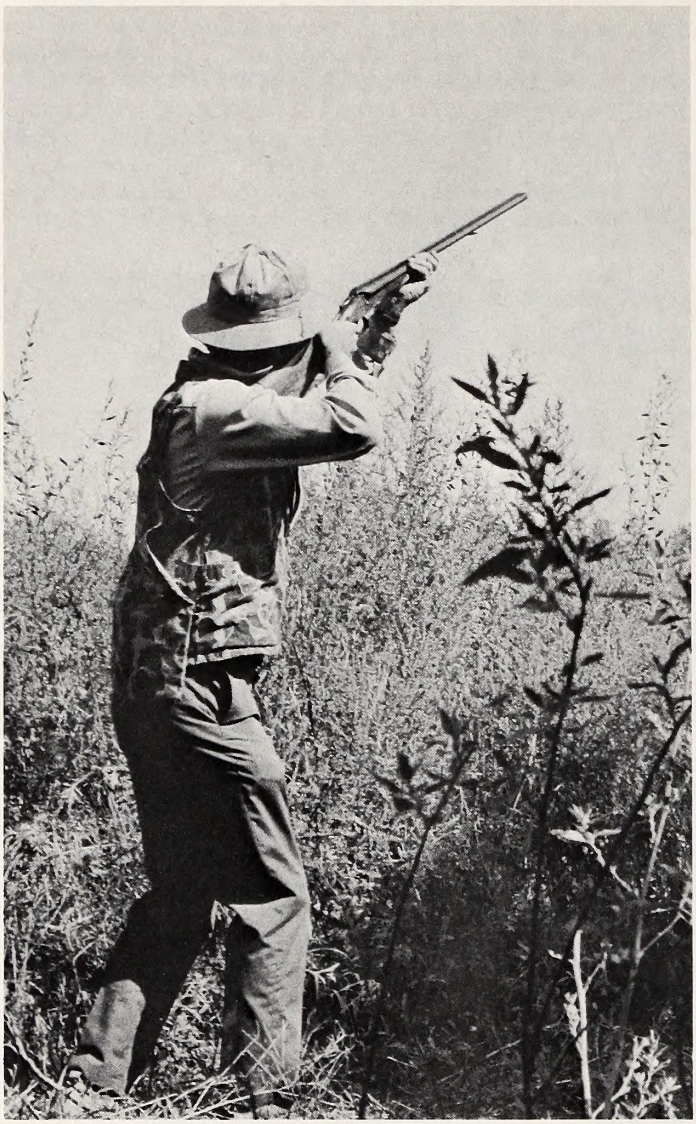
Game	Weapon	Projectile	Load of Black Powder
Squirrel	Kentucky rifle	32-36 Cal ball	20-40 gr FFFg
Groundhog	Kentucky or target rifle	45 Cal ball	70-90 gr FFg
Whitetail	Kentucky	45-58 round ball	70-110 gr FFg
	rifled musket	58 Cal Minie, 500 gr.	50-80 gr FFg
Rabbit	Shotgun 12 ga.	1⅛ oz. No. 6 shot	75 gr FFg
Rail	Shotgun 12 ga.	1 oz. No. 8 shot	75 gr FFg
Woodcock	Shotgun 12 ga.	1 oz. No. 8 shot	75 gr FFg
Quail	Shotgun 12 ga.	1 oz. No. 8 shot	75 gr FFg
Dove	Shotgun 12 ga.	1 oz. No. 8 shot	82 gr FFg
Snipe	Shotgun 12 ga.	1⅛ oz. No. 7½ shot	82 gr FFg
Duck	Shotgun 12 ga.	1¼ oz. No. 6 shot	82 gr FFg
	Shotgun 12 ga.	1½ oz. No. 4 shot	89 gr FFg
	Shotgun 10 ga.	1½ oz. No. 4 shot	109 gr FFg
Geese	Shotgun 12 ga.	1½ oz. No. 2	102g FFg (2)
	Shotgun 12 ga.	1¾ oz. No. 2	136g Fg (2)

(1) All shotgun loads use 0.125 card and 0.500 Wet Fiber Wad
(2) Maximum load, use with caution only in magnum guns.

THE DOVE

TRICKY TARGET

By Frank Mooney



Dove shooting looks easy, and it often is, particularly at the first of the season. But the early October hunting and the entire second part of the split season can present some challenges and call for some new tactics.

THE mourning dove isn't necessarily the most prized upland game bird, but it's without question one of the swiftest and most challenging for avid wingshooters. One good reason why this game bird is so popular is the fast action it presents while giving the hunter many chances to burn his ammunition. Even the best of wingshots may over-heat the barrel of his favorite fowling piece before grassing his limit. A hunter who can bag his limit with a box of shells is indeed knocking more than feathers.

One good point that can not be overstressed is the use of small shot. The mourning dove is a tricky target by anyone's standards but this loose feathered bird is not hard to knock from the sky. The problem arises when the hunter is trying to center the bird in the pattern of the shot column. Number 9 shot is ideal for many hunters the first part of the season. For consistent kills never use larger shot than 7½.

Preseason scouting for doves is still one of the best ways to consistently fill your bag limit. For some reason, doves prefer certain areas; however, if food cannot be readily found they will migrate to another area that can provide them with the type of open fields they like best. During the first part of the season while harvested grain fields are not plentiful, the open weed fields serve as important feeding plots until grain is more available.

Checking the craw of the first bird taken can be helpful at times because it gives you some idea of what the birds are feeding on that particular day. Cut over wheat fields provide abundant feeding areas for the local population of doves. I didn't realize that wheat picked up from harvested fields played such an important part in the mourning dove's diet until I started noticing the craw of dead birds. Since this time some of my best shoots have been at wheat fields when cornfields were not harvested by the September season.

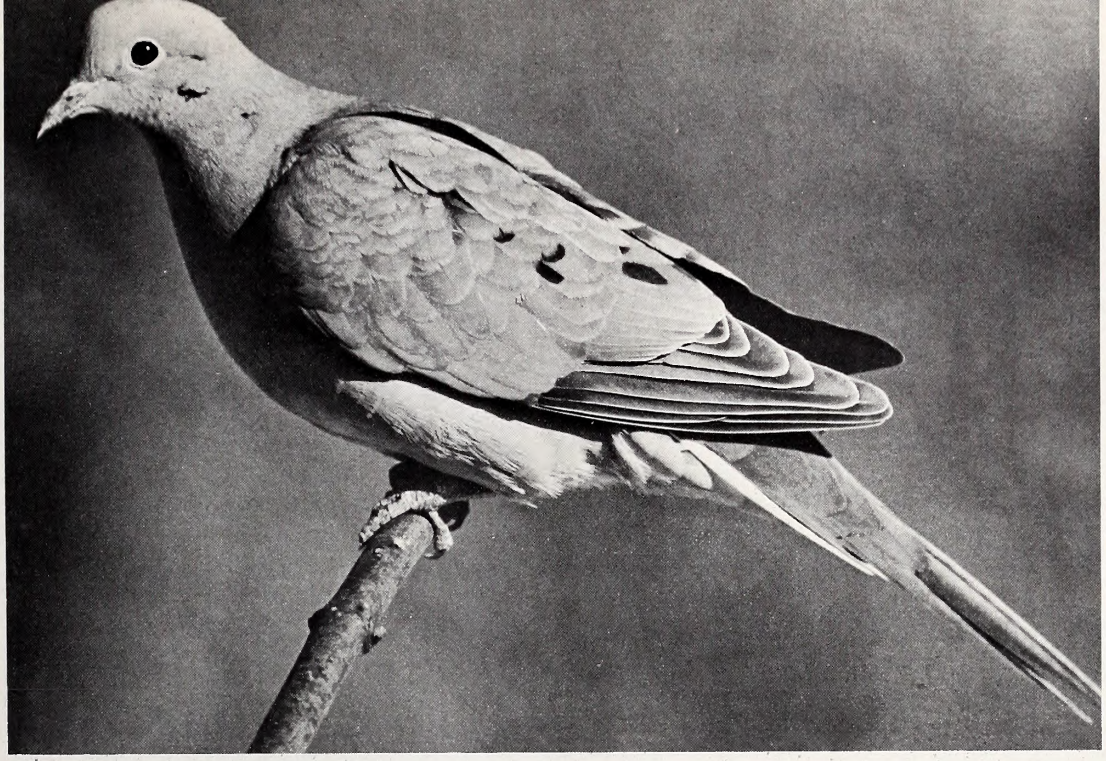


PHOTO BY LEONARD LEE RUE III

Even when hunting young birds I get better shots wearing camouflage clothing. Whenever possible, I sit in the shade of a tree or bush and have some foliage in the background to break up my outline. A hunter silhouetted against the open sky with street clothing on will have a lot harder time filling his game bag. Sitting instead of standing will have some effect on most game. When the hunter frightens game it is usually when he is walking upright and most creatures identify this upright position with man.

One of the reasons for the mourning dove's popularity is the fact that it's found virtually everywhere. Its ability to migrate south before cold weather comes when food is often covered with snow has much to do with its ability to cope with its environment. It ranges from the colder climate of Alaska, south into balmy Central America and provides great shooting over all this area where it is hunted. The mourning dove is so plentiful in the grain regions of Mexico that farmers are begging for hunters. Even carbide cannons firing automatically and young boys racing through the grain fields fail to keep the doves from consuming enormous quantities of grain.

At times, especially around noon, doves fly very little and this can provide little action for the hunter. Getting your partners to surround a grove of trees where doves are known to loaf can start some fast action. Usually this type of jump shooting doesn't last long and demands great shooting skill. Their erratic flight, small size and explosive reaction can separate the men from the boys when it comes time to count your empty hulls and check the game bag. Any bird that can zip along up to speeds of 60 miles an hour has got to be in big demand by skilled wingshots.

Even after several seasons I vividly remember the time I had almost given up finding a hot place to shoot doves one afternoon. Most of the fields around home had been pretty well shot over by local hunters and gleaned by local doves when I found a long, narrow corn field that had been cut for silage. No doves were in sight in the air or on the ground.

It was real hot and I couldn't muster enough energy to walk down the long rows to check the other end of the field. I remembered my binoculars in the wagon. Suddenly, everything was in focus with doves galore on the opposite side of the field stuffing their craws with corn and weed seeds. Grabbing my shotgun and shell-laden vest, I was in hot pursuit. The afternoon turned out to be a big success but without my binoculars I probably would have missed out altogether.

The last couple of seasons the doves around my bailiwick have migrated out around the second week of the season thus leaving an empty space until the migrants of the north ride the air currents southward. About the time one gets heady from the success of the first hunt or two, the local doves are splitting the wind for warmer climes.

There is no way around shooting skill, but luck, abundance of game, locating feeding ground, early migration, etc. all play an important part in the total kill. This is part of the challenge, the reason to try harder and enjoy the hunt to the fullest when things click.

From all reports the mourning dove is still making a good showing against liberal bag limits and long seasons. The world would stand to lose much without this migrant soaring overhead. With sound game management, the hunter's concern and good habitat, this game bird should be around for many great seasons to come.

The View From Charlie's Bunion

by Joyce Durham Barrett
Toccoa, Georgia

HAVE you ever been up to Lordamercy Cove? How about As Knob? Or maybe Stink Creek which is somewhere along the way to Devil's Tater Patch? If you ever have the pleasure of hiking along the southern terminus of the Appalachian Trail, you might come upon these or any one of the other hundreds of quaintly named ridges, gaps, creeks, trails or coves, which identify certain scenic areas of the beautifully rugged terrain throughout the Great Smoky Mountains of North Carolina and Tennessee.

The 2000-mile trail has been cleared, measured and marked through 14 states all the way from Katahdin, a huge granite monolith in the wilderness of central Maine, to Springer Mountain in the northernmost section of Georgia. The names assigned to strategic locations and land formations along the way can be found in trail guides of the Appalachian Trail Conference, names which range all the way from the picturesque to the whimsical to the frightful. Just thumb through the pages of a trail guide taking special note of these place names and likely as not you'll have a yearning to go and hunt them out for yourself.

How would you like to get caught up on Slaughter Mountain, for example, or either one of two similarly named gaps: Fighting Creek and Swinging Lick? Slaughter Mountain you will find not too far from Blood Mountain, the highest point of the Appalachian Trail in Georgia where, according to an Indian legend, the Cherokees and Creeks fought until the mountain ran red with blood. The blood remains until this day scattered over the rocky slopes in the form of reddish colored lichenous plants.

If you like the challenge of a rugged, dangerous climb you might hump it on up to Defeat Ridge, Dismal Mountain or Breakneck Ridge. Top these off by a carefully planned trek up to Clingman's Dome, which, rising upwards at 6,642.8 feet in the Great Smokies. is the greatest elevation along the entire Trail, and you'll be on your way to becoming a well-seasoned hiker.

While you're out there racking up the miles be on the lookout for birds, for if the names are any indication they are there in profusion: Swallow Creek, Old Buzzard's Roost Gap, Hawk Mountain, Partridge Creek, Little Pigeon River, Raven Fork, Eagle Rocks Creek, and Snowbird Range. And well they should be there considering the Smoky Mountains National Park alone contains more species of trees than all of Europe. How would you like to live over at Balsam Corner for a weekend or maybe up on the tiptop of Big Cedar Mountain? On the other hand, if you prefer flat country there's always White Oak and Walnut Bottoms; and gaps, well, you name it: Black Gum, Wateroak, Beechnut, Sassafras, Buckeye, even Brier and Fodderstack.

Perhaps whimsey is your delight? If so, you might fall for (but hopefully not from) one of these: Chunky Gal Mountains, Licklog Gap, Sweatheifer Trail, Big Butt, Old Troublesome, Granny-Top Mountains, Fittified Springs, and Juney-Whack Branch.

Imagine our Pa-Pa's surprise when we told him one warm evening last April where we'd be in the event he should need to contact us. "In case of emergency, Pa-Pa, just call up to the Forest Service Station in the Smoky Park and tell them we'll be camping out on Charlie's Bunion." Pa-Pa promptly pointed to three that we could see anytime we cared to and with considerably less trouble.

Pa-Pa's bunions, however, don't quite measure up to Charlie's which happens to be a massive outcropping of the rocky backbone underlying the Great Smokies. This denuded formation was caused by a great forest fire in 1925 which resulted in its present charred-like appearance.

Other parts of the anatomy you might come across along the trail include: Caesar's Head, Round Bottom Trail, Rocky Face Mountain, Pickens Nose Trail, and Gullet Gap.

And speaking of the esophagus, should you happen to be traveling over the Hungry Ridge Trail you might want to step into Big Kitchen Knob where you are likely to be satisfied by Plumorchard and Strawberry Top. If that's not to your liking, then finish it off with a trip over one of the gaps, Sugartree and Sweetwater. Accordingly, if you feel the need for washing up afterwards, I'd suggest your sliding on down into Soapstone Valley where there would most likely be a spring or two waiting for you.

But beware of the Devil's Kitchen! For it bespeaks of Wine Springs Bald and Rye Patch Branch leading you on up to the ultimate in High Falls. Who knows but the next morning might find you out on a limb on Hangover Mountain where you'd need to take a dip into the Ice Water Spring before you'd be well enough to hit the trail again.

Although this southern portion of the trail is one of the most rugged and the highest in the Appalachian chain of mountains, and although you're sure to run into your fair share of troubles (aching back, sore feet, too much rain or not enough water), you're certain to come away from your hike completely refreshed from having walked across a sea of mountain ranges, atop clear, elevated summits and grassy balds which allow magnificent views in all directions.

The lush green foliage on the mountain-sides, the ferns, mosses, clovers, little white and purple-shooting stars, make the woods a virtual rain forest in the spring; while in the summer bloom the flowering shrubs of rhododendron, azalea, and laurel rendering the hiker's pathway one of unsurpassed beauty. It must be just such as this that inspires names like: Pretty Hollow Gap, Grassy Patch, Dripping Springs, Laurel Top, Sugarland and Love Mountains.

What a place to get lost in! Old Whitesides beaming down at you from one side, Frosty Mountain on the other. So if you can't resist the urge to linger awhile, just crawl up under an overhanging densely-thicketed cliff on Smoky Dome and wait for the morning to smile down upon you. Look there! It's rising across the way now on Sunup Knob! ◆

PHOTO BY LEONARD LEE RUE III

Fall Gobblers?

By J. R. Franck
Trenton, N. C.

DOES a wild turkey gobble in the fall or just in the spring at mating time? I've heard this question debated for years. However, as a result of a chance encounter I had with a flock of wild turkeys last fall, I can now answer the question.

About ½ hour before sunrise last October 15, in the Roanoke River lowgrounds I climbed a tree and got settled in on the tree stand to pursue one of my favorite activities: Still hunting for deer. This tree stand had been built last turkey season by a fellow hunter and me at the edge of a swamp between two well trod deer trails.

About the time I had gotten settled for the long deer hunt, the creatures of the forest began to stir. However, nothing gave me any clue that I was about to spend one of the most fascinating hours of my life. It all began when a turkey hen started calling from a tree in the swamp about 40 yards in front of me. She was immediately answered by another about 30 yards behind me who was answered by a whole chorus of turkeys off to my left.

By this time I realized that I had walked right into the edge of a flock of roosting wild turkeys. This king of wild birds and I had been involved in a love affair since 1937 when I first moved to the banks of the Roanoke. Thus, I listened intently as these turkeys conversed during that crisp, autumn dawn.

By now (10 minutes later) the turkeys called back and forth with regularity. It became steadily more apparent that the first turkey I heard was the leader. As she kept calling from her perch in the tree with a series of caulks and putts, the others began to get closer to us.

It was then that I learned the answer to the question posed at the beginning of this article. I heard, to my surprise, a clear deep throated gobble about 100 yards off to my left. The clear notes of that gobble probably pushed my pulse to 120 and my blood pressure to 200. Another turkey nearby (which I presumed to be a young one) tried a few feeble "near gobbles." The older gobbler gobbled only twice more.

Now I began to hear turkeys fly down to the ground behind me. I saw the one just behind me drop to the ground and walk within 10 yards of me and stroll across the swamp. As the caulks and putts continued to come from the mama hen in front of me (still in her tree) the others moved to the edge of the dry swamp and as they crossed the dry swamp bed 40 yards away, the mama hen sailed to the ground and got in front of the flock which followed her in single file toward the distant corn field. I looked these creatures over carefully with my binoculars, and counted 12 young and 4 large birds. Almost as they disappeared, I caught a glimpse of a deer moving from the corn field toward me. It was a doe and she must have walked within a few steps of the turkeys. The night shift and the day shift were keeping things busy in the corn field across the swamp.

I looked at my watch and only then realized that I had been in a wild turkey trance for 1 hour and 10 minutes. I would have sworn it was only 15 minutes. This had been an even greater thrill than the 21 pound gobbler I killed 3 years ago.

As I unloaded my gun in preparation to descend the tree, I silently thanked God for allowing me the rare privilage of waking up with the turkeys. Since then, I've been counting the days until April when I hope to renew the acquaintance. ⬍

SILENT GUIDES

by Dan Kibler

Many types of maps are available to the sportsman. Each has specific uses and purposes. Learn to use them.

ALTHOUGH most don't realize its values, the topographic map is something that a serious outdoorman's home (like the appliance salesman on TV says) "should never be without."

Its uses for hunters, fishermen, campers, and the like, are as varied as the users' interests, ranging from finding a suitable camp site to studying landforms, finding jeep trails or keeping one from getting lost in the woods.

"The best starting point for any land-based activity or study is the top (pronounced 'tope') sheet," Hugh Wilder, Ass't. N. C. District Chief of the U.S. Geological Survey, noted. "They are so detailed that you can find out almost everything about the physical characteristics of land by studying a top sheet."

Relatively simple to obtain, topographic maps are a must for hunters looking for or planning to hunt in an area new to them. By consulting an index sheet for a statewide region, a person knows almost immediately if the territory he wishes to explore is mapped, and if so, can get the quadrangle's name and the all important quad map, or top sheet. With top sheet in hand he can explore every nook and cranny for landforms that would influence an animal's movement such as creeks, saddles, gulleys, swamps, etc. Also, the very observant sportsman can become acquainted with the prospective area before ever seeing it.

Familiarity with the lay of the land is not only useful in locating areas that are possibly used by animals, but it may be a lifesaver if one happens to get lost. It's difficult to get lost with a top sheet at hand and it's much easier to get back on the right track with one. A quick look at the topographic sheet and orientation with some landform that shows up on the map can give the lost hunter or fisherman a definite idea regarding his location, not to mention a route to get him back to where he wants to be.

"Using a top sheet a person can see how to get to a certain place, then see every hill and stream in the area," Wilder said. "In the Water Resources Division of the USGS we can, using landforms found on top sheets, determine places that will be high yield areas for digging wells." (All of this being done at a desk possibly a hundred miles away).

More serious campers can locate new areas to camp and determine the best places to set up their camp. Using a top map, a suitable location can be found with regard to surrounding streams and their floodplain before the camp is set up. Top maps denote the locations of jeep trails and established hiking trails, and where trails are not present; top maps can be used to find places to hike to without getting lost on the way. Top maps show boundaries of National Parks and public game preserves, certainly of interest to campers, hunters and fishermen alike. But to find National Forest boundaries you'll have to go one step further and visit your local Forest Service office for coordinates of boundary lines.

To plan your fall deer hunt before the season starts, topographic maps are of great value. The first map to obtain, however, is a county road map for the area in which you wish to hunt. These can be obtained from the Department of Transportation and will show most of the major features of the county including roads and streams.

A USGS Index map of the state in which you wish to hunt is a necessity. It can be had by writing the U.S. Geological Survey, Washington, D. C. 20242; it's free. The

• continued on page 26

The Ancient Debate: Natural Bait or Artificial

FISHING

by Jim Dean

PHOTO BY JIM DEAN

• Historians are not sure when men first began to use artificial lures and flies to entice fish. Some point to Aelian who described a method of fishing with flies used by the ancient Macedonians about 200 years B. C. Others suggest that the use of artificials must be at least 200 years older than that because the Roman poet Martial wrote these lines about 400 B. C.

"Who has not seen the scarus rise,
Decoyed and killed by fraudful flies."

It is probably safe to say that men have caught fish using various types of artificials for at least 2,500 years, and perhaps longer.

Furthermore, I'd be willing to bet a hatful of silver dollars that the first man to ever use an artificial lure became instantly embroiled in an argument over the relative merits of artificials over natural baits.

I doubt if there is an angler alive who has not at one time or another debated this issue from one side or the other. Nor is yours truly any exception.

A reasonable man (if that term can be applied to any of us fishermen) would have to admit that the whole issue is as foolish as it is endless. Most experienced fishermen, if backed to the wall, will admit that there is a proper time and place for everything — and this includes the use of both natural bait and artificial lures or flies.

Even Izaak Walton — considered the father of angling — realized the merits of both natural bait and artificials. Although Walton was a bait fisherman when he published "The Compleat Angler" in 1653, he was so impressed by his friend Charles Cotton's skill with artificial flies that he let Cotton write a supplement on fly fishing for "The Compleat Angler" some years later.

Still, a wide chasm exists between those who always use natural bait and those who always use artificials. For example, take something relatively simple like fishing for bluegills.

There are plenty of good fishermen who will tell you that red worms, crickets, or catalpa worms will "always" outfish artificials. It's just not true. In the spring when bluegills are on their spawning beds, a good fly fisherman using slow sinking flies or small popping bugs can fish rings around a good natural bait fisherman.

On the other hand, after bluegills have left the beds, a good angler with a basket of crickets or catalpa worms will almost always outfish the man with a flyrod.

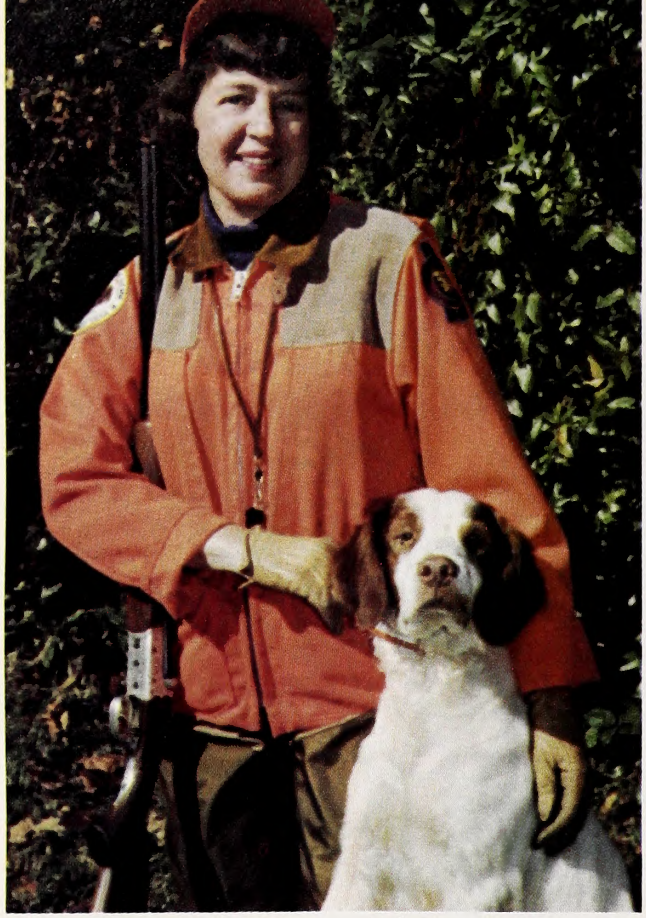
To further complicate matters, there are now fishermen who combine artificials and bait by using tiny spinners with strips of cut bait or a cricket hooked just behind the blade. Such rigs are deadly year 'round.

Other examples are legion. Many people believe that the best way to catch a lunker largemouth is by using a large shiner as bait. They're right at least part of the time. But there are times when a fisherman with an artificial worm, plug or spinner bait will catch more and larger bass.

The same is no less true of freshwater trout fishing. In the spring when water is high and dingy, a bait fisherman will normally outfish a fly fisherman, although an accomplished spin fisherman with tiny spinners will usually do very well.

But when mayflies are hatching heavily, or when streams are low and clear, a good fly fisherman has a definite edge.

I guess what it all boils down to is preference. Some people prefer to fish with natural bait, while others prefer to fish with artificials. But that's not the same thing as saying that one technique is always better than the other. T'aint so. Never was.



Turn Your Wife Into Your HUNTING BUDDY

By Art and Joan Cone
Vienna, Va.
(Reprinted from *Virginia Wildlife*)
Photos by F. N. Satterlee

DOES your bride object when you want to go off alone on vacation during hunting season? Does her attitude towards you approach the absolute zero of outer space when you return home with a venison roast, a few rabbits, or maybe a goose? And what about you? Are you weary of hearing old Joe tell the same stories . . . worn out because Jim's snoring kept you awake . . . disgusted because Jack insisted you'd missed that buck when you'd had an easy shot and tried to claim the antlers for himself?

There's an answer to all these varied problems. It's extremely simple. All you need do is make hunting a family sport and take your wife with you. The time you invest in selling her this idea will pay dividends. These dividends include better game cookery, less useless arguments over vacation time, and such positive extras as the fun of camping with someone who smells better than Al ever did and never keeps you up all night with poker and drinking.

How do you get your wife, or maybe she's your daughter or your girl friend, out hunting? There's no single answer. Maybe all you need do is point out that women have hunted since the dim beginning of time, and Diana or Artemis, the patron goddess of the chase, was an excellent shot and wore very feminine clothes indeed, such as they were! At this point you bring out some mail order catalog featuring attractive hunting clothes for women . . . and even jewelry with a game bird or animal motif.

After you've convinced her that a lady hunter can be feminine and attractive, the next step is to introduce her to firearms. Depending on her background and upbringing, this can be easy or extremely difficult. There's a great deal of psychology involved and you may need to be very patient and understanding.

If you've married a farm girl or a rancher's daughter, your problems are minimal. But then, she probably goes hunting with you already. If you've walked the aisle with a city or suburban maiden, especially one who comes from a family whose entire outdoor experience consists of fighting crabgrass, you may have difficulties.

Many young ladies today have a deathly fear of guns. They view firearms with the same attitude they take towards poisonous snakes, roaches, and mice. If your wife exhibits these symptoms, try not to blame them on her mother. Take a positive attitude instead. The truth is that constant misguided propaganda by people who have never hunted and probably never even fired a shot at a target has had an unfortunate effect. It's up to you to explain that fear of firearms is caused by ignorance.

First prove to her that a shotgun or rifle cannot fire when it's really empty. Show her how to prove that it is empty. Then get her to hold it and see for herself that nothing traumatic takes place.

When she has enough confidence to hold an empty gun without fear, take her out to a shooting range for some practice. If possible, go to a gun club which you know has women shooters. Seeing them bust clay birds and puncture targets is a big help.

Eventually, you'll want to buy your wife a shotgun or rifle. When you do, consider that the ordinary firearm is designed to fit the "average" man rather than a woman. You probably will want a gunsmith to adjust the stock to fit her. You'll also want to remember that a beginner can't take the recoil and noise you may take for granted. If you're a big game hunter and a rifle buff, start your wife with an ordinary .22 rifle such as the Winchester Model 69-A. This Junior Target Shooter's Special is relatively inexpensive and is ideal in size for most women. After she masters that is time enough to buy her ear protectors and let her shoot something with a lot more zip.

Joan Cone is not only a very competent hunter, but an expert at game cookery. Her "Easy Game Cooking" was a sell-out last year, and now she has available "Crockery Game Cooking." It's $1.00 from Joan Cone, PO Box 2993, Williamsburg, Va. 23185.

Co-author Joan Cone (opposite page and above) goes afield with a favorite setter. Your wife can become a hunting buddy, too.

When you do buy her a hunting rifle, don't look for the lightest possible weight in a rebult 30-06 Springfield. She should shoot the same caliber as you. This eliminates mixups with cartridges. She needs a rifle that will fit her, and one that is not so light as to make recoil excessive. Lightweight, short-barreled rifles are easy to carry. They've turned many good-sized men into flinchers too.

As for a shotgun, my personal recommendation is a 20 gauge, bored improved cylinder. Even if most of your hunting will be for waterfowl, start your bride with a 20 gauge bored so she can hit a clay bird with reasonable ease. She'll have enough shot in her pattern to get results. Yet the 20 gauge offers much less noise and recoil than a 12 gauge gun. The stock should be shortened to fit her, and she should never practice shooting without ear plugs, or other ear protectors. You should wear them too. They make shooting more pleasant and help prevent deafness.

Wouldn't a .410 shotgun be best for a beginner? Maybe from the standpoint of noise and kick, but the .410 is truly a tool for an expert shot. Unless you're good, how can you score with it? Always remember that, regardless of the sport, it's important to keep a beginner from becoming discouraged. When you get down to it, the reason International Skeet isn't more popular here is that it is more difficult. The quicker any beginner can see results, the more enthused he or she is bound to become. This goes for any sport you can name.

Before letting your wife try skeet, take her out with a hand-trap and throw the easiest possible birds. A stationary trap, such as the Trius trap, is even better. You can adjust it to throw a bird high and straight. When she breaks these, try a few angles with her.

Skeet's been mentioned, what about trap shooting? Nothing wrong with it! When your wife is ready to tackle a 12 gauge gun, trap shooting is ideal for her. You can't shoot it with a 20 gauge open bore gun.

You can't become a good shot without practice. The more your bride can get out and bust clay pigeons, the more expert she's bound to become. You'll know when she's ready to go hunting. It will be obvious.

Unless you expect to confine your hunting to waterfowl or big game, the way to start is with upland game birds and rabbits. It's common sense. Generally the scenery is pleasant, the weather comfortable, and there's enough walking to keep anyone warm. (Many women have poor circulation in their arms and legs and therefore feel cold before a man will).

Also important, upland game generally provides action with such quarry as pheasant, quail, partridge, grouse, rabbit, and maybe squirrel in a broad spectrum of available species.

Additionally, the dog work is fascinating. Whether you hunt with a beagle, a spaniel, or any of the pointing breeds, your wife will be amazed at how it locates game with its nose. She may want to get involved in dog training too. Certainly she'll have more regard for your own dog.

Getting back to shotguns for a moment, many women prefer a side-by-side or over-and-under to an autoloader or pump. There's no question but that a break-open gun is safer, easier to load, and often more pleasant to carry because of its balance. The Ithaca Model 200 in 20 gauge is almost ideal for the average woman.

If you don't own a dog, and maybe even if you do, you might want to take your wife out on a hunting preserve before regular hunting season opens. A good preserve offers fast-flying birds and makes well-trained dogs available. It isn't cheap, but what good things are these days?

One great advantage of a preserve is that you know you'll have some shooting. A beginner wants to see some game. An experienced hunter will take poor days in stride. A beginner has no past successes to relate to.

No matter where you hunt, or what you hunt, remember that a lady is probably squeamish about killing anything. When you hand her a rabbit or bird, make sure it is dead first. An injured bird fluttering in a game pocket is always unpleasant. Generally this is caused by reflex action, just as a chicken flops about after being beheaded. But it's unnecessary. Kill game quickly and cleanly is always the best motto.

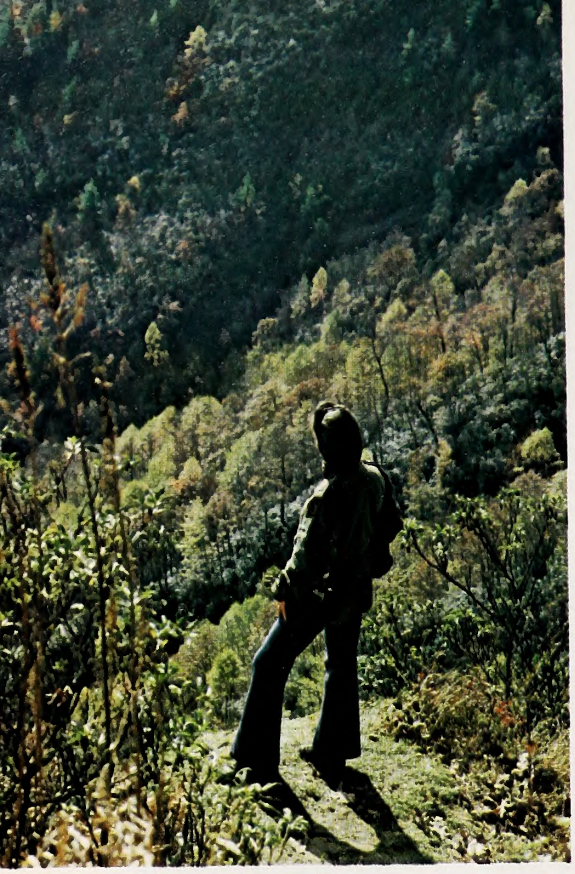
On this topic, it might be mentioned that clean kills come from good shooting rather than magnum shells. Regulation trap or skeet loads, or their equivalent in reloads will serve as well as the magnums for everything except waterfowl and skittish pheasants. They'll cut recoil considerably too.

Once your wife overcomes her "I am a murderer" syndrome, you're in clover. From now on you'll have a real companion. You'll find your trips are more enjoyable. You don't have to hurry home because of wifely displeasure. You'll have congenial companionship and less cigar smoke and profanity. Maybe you'll miss Old Joe and Hank and their loud voices that frighten deer and quail and everything else. Probably you won't except in the sense that comes with feeling relief.

There's another bonus too. Your wife will probably take a much increased interest in game cookery. Instead of turning quail into stone, she'll tranform them into gastronomic delights.

Maybe she'll even work with your dog while you're out making a living. That wouldn't be too bad either.

The truth is that a wife who hunts with you will make your life more pleasant. The investment — in proper clothing, boots that fit her, a gun adjusted to her measurements — will be more than compensated for whenever you go afield. You'll have another area of understanding, more common interests, more enjoyment in doing things together. ▲▼



WILDCAT ROCKS PHOTO BY JIM HUDSON

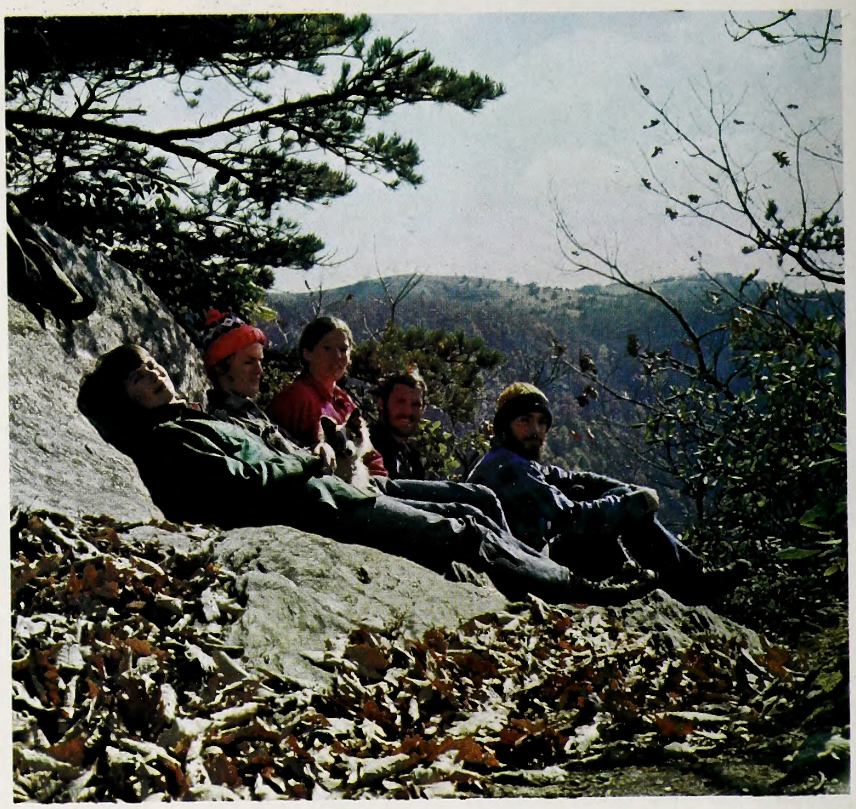


PHOTO BY CHRIS TURNER

Off the Beaten Trail At Doughton Park

by Chris Turner
Cary

It was raining the Friday afternoon we left home in Cary to drive to Doughton Park on the Blue Ridge Parkway (mile 238.5 to 244.7). Knowing that it doesn't usually rain during October in North Carolina, my wife Debbie, her brother Dan, and I were still hoping for a good weekend.

We arrived in about four hours and proceeded to set up camp. Jim and Karen Hudson were to meet us late that night so Dan and I busied ourselves gathering firewood to keep us warm while we waited for them. After supper we began our vigil of caring for the fire and waiting for the Hudsons. Following three hours of cold drizzling rain, we decided the Hudsons would recognize our car easily enough, so we went to bed. No sooner had we thawed our sleeping bags out than we heard a car drive up complete with miniature collie named Ginger, and proud owners named Jim and Karen. Moral of this story is, "If you want your friends to arrive soon don't wait out in the rain." It was about midnight by then so we kept the conversation to a minimum before turning in for a good night's sleep.

Saturday morning was cold and nippy. When I say nippy, I'm referring to the atmosphere in a six man tent containing five people and a rambunctious puppy. The first thing Ginger did when I poked my head out of my mummy bag was to nip my nose. Knowing how I look in the morning I can hardly blame the dog.

Since it was the last weekend in October, there was no way to get any volunteers to cook breakfast without building a fire to defrost the cooks with, so that's what we did.

After breakfast we set out to explore the trails running along the tops of the bluffs. Our first stop was at the large wooden map of the park. Located in Wilkes and Allegheny counties, Doughton Park is the largest recreation area on the Parkway and the map gives you a quick tour of the various trails in the park.

We hiked to the Wildcat Rock scenic overlook and enjoyed an excellent view of the valley. While the trees and mountains were beautiful, it was the small pioneer cabin barely visible from the overlook that garnered most of our attention. Taking the Fodder Stack Trail, we looked for a better view of the cabin, but without success.

For lack of sense and a good, handy map of the area, we decided the best way to see the cabin was to depart from the trail and descend more directly. Not only was this unwise, we found out later it was illegal. Our descent was hastened by the steep mountain walls and the wet rhododendron leaves on the ground, and could best be described as backsliding. While this kind of trailblazing

PHOTO BY CHRIS TURNER

doesn't help the plant life, it is even more damaging to the posteriors of the people foolish enough to try it. Despite our slipping and sliding we made it to the bottom slightly sore but otherwise all right.

Yellow poplar trees made a golden fence around the tiny cabin. Hills on all sides decorated the valley with a multitude of colors. The Wildcat Branch of Basin Creek runs within a deer's bound of the cabin. When we tasted the cold clear water it wasn't hard to imagine ourselves living in the cabin with its pristine surroundings. However, it was hard to imagine how anyone raised twenty or more children in it like the sign back at the overlook said.

As we ate our lunches by the creek we tried not to think that the sun was already leaving the valley and would soon leave us in darkness if we tarried too long at the bottom of the mountain.

The fact that we would have to climb straight up the side of the rocky bluffs in order to get back was obvious to all of us and mentioned by none of us. With a final look at our surroundings we decided the mountain was not going to move so it was up to us. Dan, Jim and I took turns leading the way. Walking sticks were useful in the early going; serving both as balancing aids and as tools to move aside spider webs and occasional briers. The higher we went the less useful the walking sticks became. At one point they became more of a hazard than a help, and like most things I found this out the hard way. It was during a particularly steep climb on the sheer rock wall that tragedy nearly struck. My camera was tucked under one arm, and I had most of my weight on the walking stick. Before I realized what happened I was sliding on my back going head first down the mountainside. The walking stick had slipped on a patch of damp moss and sent me sprawling. Ginger was behind me when I fell and my first recollection of the fall was seeing the little dog rolling down the hill like a furry ball.

Jim yelled for me to grab something, and suddenly there was only one small twig of a tree between me and a drop of twenty or thirty feet. I grabbed for the tree desperately and it held. Ginger, meanwhile, rolled into a rocky crag unharmed. Thanks to my heavy field jacket and leather gloves I got up without a scratch, although my shoulder and arm throbbed for some minutes thereafter.

The rest of the climb was uneventful as we took our time and carefully crawled to the Fodder Stack Trail Overlook. We rested there, thankful for our safe exit, and vowing never to leave the trail again.

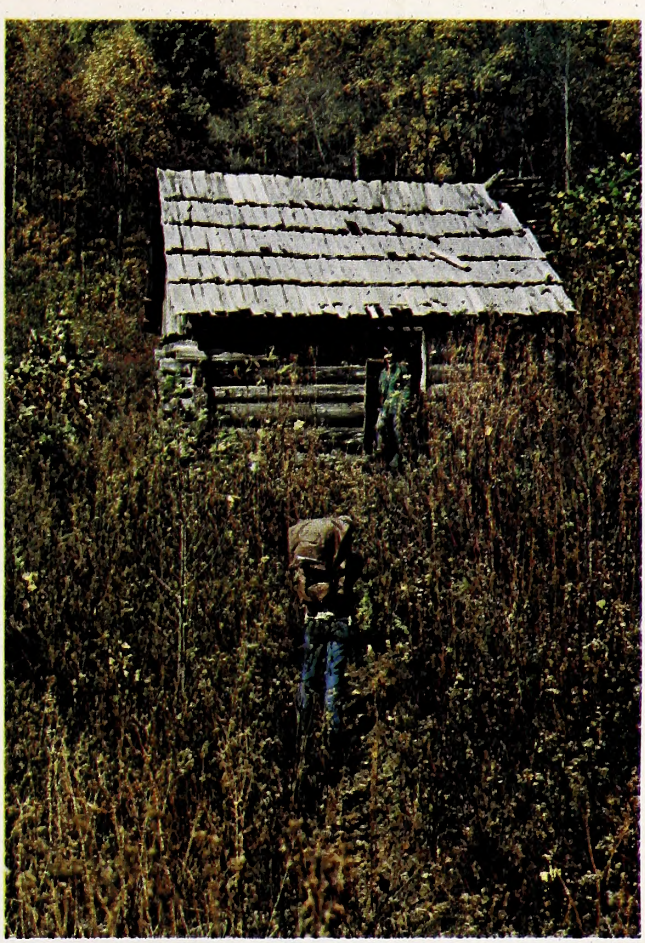
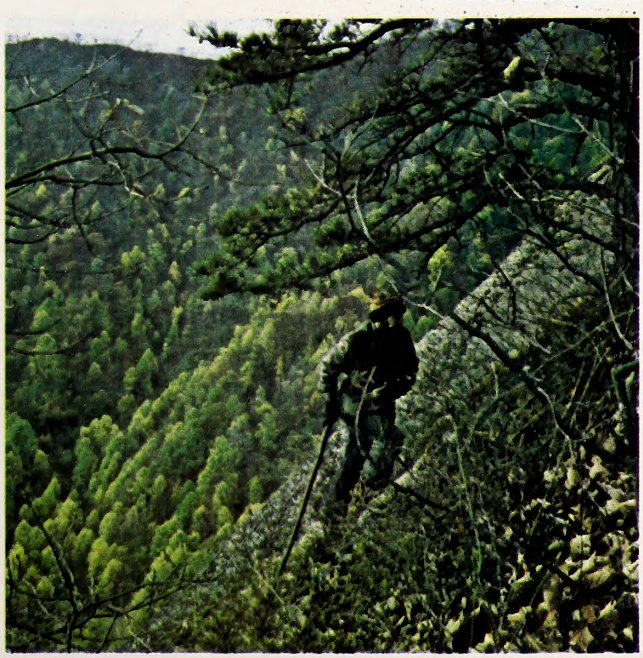


PHOTO BY CHRIS TURNER

Even the rocks feel soft to weary hikers. Karen and Jim Hudson (left), Debbie Turner, her brother Dan Stewart, and author, take a break in the October sunshine.

Each campsite (above left) has a picnic table and fire place. Park Rangers come by and permits are purchased. The rustic cabin (above) of a bygone era, is carefully investigated by off-the-trail hikers. Below, the author starts the precarious trek up the slope; then came the tumble described.

PHOTO BY DAN STEWART



Conflict of Interest

"WE cover a lot of territory huntin', Will. But there's no doubtin' it, take things as they come the Nance Place round's the best of it. This afternoon turned back the years."

"You got no argument with me. You don't find birds like that anymore. Most places you can hunt just don't get the protection this one does — they been hunted to death."

"Lyman Nance has got a head on his shoulders, like his Dad before 'im. You remember how Clete Nance was. He'd let folks hunt but he always saw the place wasn't overshot. That's how you have birds."

"He planted it right too, Will — pea patches, lespedza corners, corn and grain strips, plenty of edge. He didn't have to plant it like he did. But Lyman's kept it that way. You got to respect that this day and time."

"Frank, that bean stubble, blow-down corner your Joe dog pointed in's looked just that pretty for 40 years! It's always a sure thing. You can bet that bevy goes back a few generations too."

"Well, it's a grand hunt and the only cover like it I know of."

"— No, Frank, you know one other. What you been sayin' 'bout the Nance Place made me think of it. That and Murray Trogdon. Study a minute and it'll come to mind."

"— You got me. Where is it?"

"Bud Chambers place."

"Bud Chambers — idn' he the one that turned us down flat that time? 'Bout eight years ago. Had the whole place posted. Ummm — uh, but you're right — it's a beautiful place. I remember we were both mighty sick after seein' the lay of those fields and then gittin' turned down. Leavin' those two coveys that crossed the road wasn't easy."

"But Lord, Will, what a cantankerous old so and so. Tighter 'n a tick. Won't let anybody set foot on the place with a gun. Didn't have to be so blamed ill with us that day either. You'd a thought we'd asked for the deed!"

"You know he died 'bout two winters ago?"

"No. Reckon St. Pete opened the gates?"

"Don't think he was really all that bad Frank, Aw, fire, I know how he was that day, and there's no doubtin' he was quare in a lot of ways by most folk's standards. But Murray Trogdon we both got respect for and Murray knew 'im as much as anybody was allowed. Murray's told me some things 'bout the old man. You and me had more in common with 'im than we thought."

"How's that?"

"Well, there's some things we didn't know that day we got the door shut in our face. For one thing he'd lost his wife with typhoid six months before and was still a grievin'. They were honeymoon close, Murray said. After 36 years."

"You're right, Will. We didn't know that."

"But he never would let anybody hunt, Frank, even before. He'd hunted once but got away from it after his last dog died. Which explains the Ithaca gun in the corner the day we were there."

"Do you know why?"

"Had feelin' for his birds — I mean, more'n most."

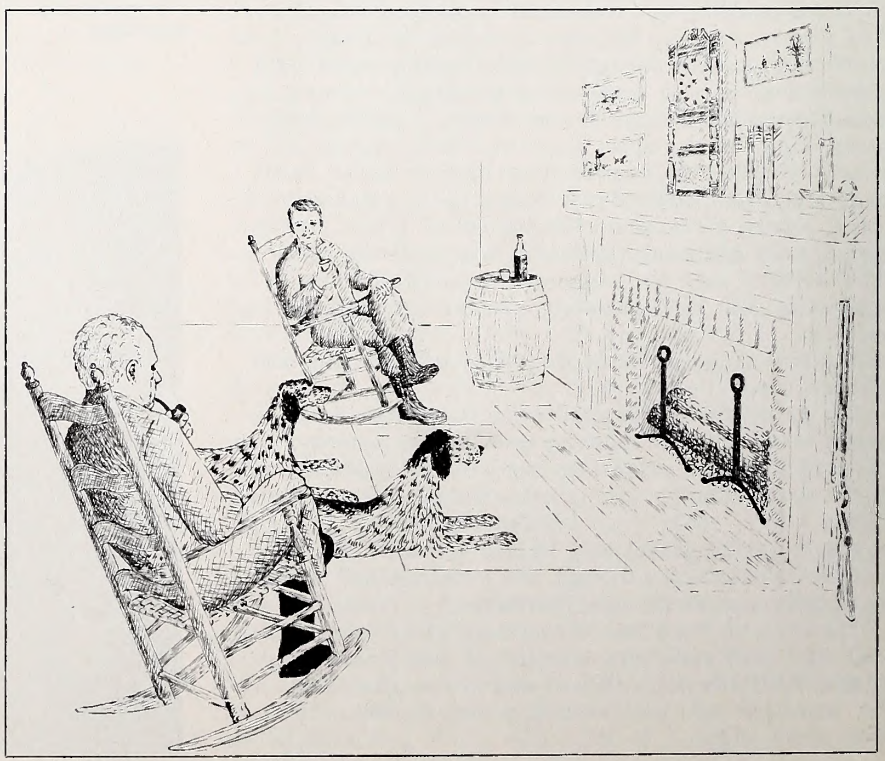
"Murray stayed over with 'em one rough night he couldn't get back to town. Before she died."

"Said he never really understood about the birds until that next mornin'. They started covey-whistlin' 'bout daybreak and the old man stepped out to the side porch to listen."

"Said he called his wife out to join 'im."

"Murray was in the side room. Hadn't got up yet. Just layin' there listenin' to the birds too. Don't

by Mike Gaddis
Raleigh



"He planted it right too, Will — pea patches, lespedeza corners, corn and grain strips, plenty of edge. He didn't have to plant it like he did. But Lyman's kept it that way. You got to respect that this day and time."

guess they even knew he heard 'em."

" 'Will, I remember their conversation word for word,' he told me later —:"

'Th' birds are a stirrin' Clare. Musta roosted in the fence corner agin. Lord, that I could wake up to that sound every day I got left.'

'They got close to you, ain't they Bud?'

'They're fam'ly, Clare — fam'ly.'

"You know I ain't been just Will. I never knew it was that way. I'm glad you told me."

"Me either, Frank. But there's more yet."

"About four years before he died a stray setter pup ended up on his doorstoop. Filled a void I guess and they were inseparable. Shadowed his every footstep, shared table and bed. He returned all that and more. At 18 months she was as handsome a bitch as you'd hope to see, so Murray says."

"But some blood began to stir along then and once she got past the stink sparrows she began runnin' big and chasin' every bird on the place. The pea patch covey, the spring hole covey, the fence corner bevy, — she never missed a one. Knew their rounds better'n the old man."

"You might say things developed into a real conflict of interest."

"Meanwhile the pup broke herself, more or less. He came around the house one day and there she stood all bug-eyed, slaverin', and lofty as Lucy on the chicken lot bevy. In the heat of the moment he got the little Ithaca and killed her a bird."

"He never got over it."

"Turned out that pup was lost out of a crate on its way to Dr. Morrison in Whitcombe County. She was straight out of a Ghost's Beauty litter. When the word did get around Bud Chambers saw her to her rightful place though he thought the world of her. Said he wanted her to have her chance. He knew enough 'bout dogs to know she was a good one. You know her now as 'Ghost's Herald.' Joe Morrison's won 17 times with her in open and shootin' dog stakes — in class company too."

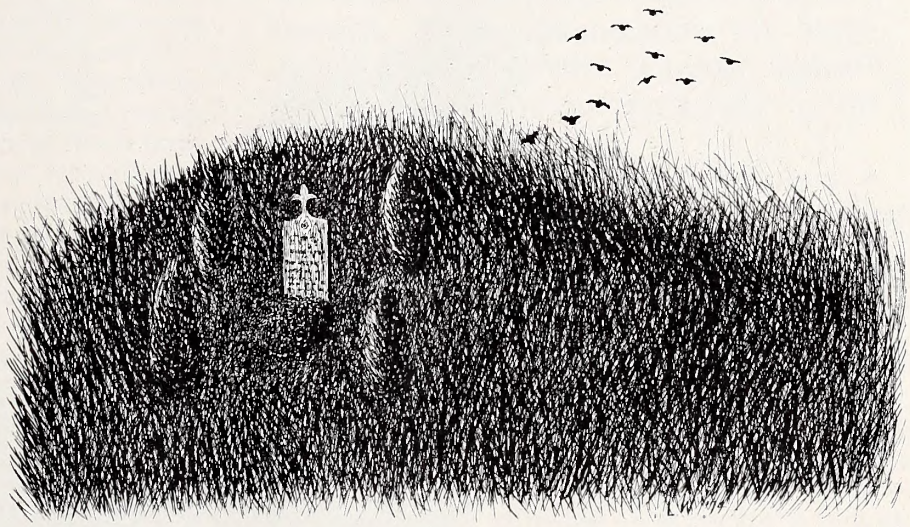
"We were hasty, Frank. He was a good man."

"Shame, Will — about the bird I mean. But it really couldn't be helped. Him shootin' the bird was inevitable."

"How's that?"

"It had to be, Will — what man can control destiny?" ⬍⬍

Copyright, Mike Gaddis, 1974



"I'll bet there's birds a stirrin' wherever he is, Will. Jest wouldn't seem right without a covey or two gettin' up now and then."

TOLLING YEARS

Fresh breath of life, distinctly sweet
Rampant tongue on a seasoned cheek
Unbounded spirit, devil-may-care
Rekindled hope, promise lies there.
Puppyhood's days at a happy clip past
These days are fleeting, how short they will last.

Lean, and strong, and muscled hard
Feathered banner, merry front guard
Field-wise veteran, an honor to calling
Hard in pursuit of his season of life.
No quarter given, true to the test
Consistency ever, only his best.

Brave hazel eyes from silvered muzzle
Head on a knee, a nose and nuzzle
Bound by garnishments of tolling years
Fires of desire still strive to burn free.
Comfort and peace, my heart knows your own
Dear staunch companion of shooting years gone.

Mike Gaddis©

The Promise of New Hope

by Ted Dossett

The New Hope project, which would include the impounding of B. Everett Jordan reservoir, has both some potential problems and great promise.

• What's 29,000 acres big, contains some of the best wildlife habitat in the state, promises some fine hunting, and is within 45 minutes driving time of seven major North Carolina cities . . . give up? Well, the answer is New Hope Game Land in Southeastern Chatham County. It's part of a 47,000 acre project being built by the U.S. Army Corps of Engineers.

Recently, the North Carolina Wildlife Resources Commission and the Corps signed an agreement under which the Commission will manage the area for hunting and fishing until it is flooded . . . a decision that has yet to be settled by the courts.

The new game land has all the ingredients needed to make an excellent hunting area: extensive bottomland, streams and rivers, oak-hickory ridges and abandoned farm fields. A partial list of wildlife species present includes rabbits (marsh and cottontail), bobwhite quail, dove, woodcock, squirrel, raccoon, muskrat, beaver, fox, mink, bobcat, turkey, deer and waterfowl. The extensive bottomlands are reputed to harbor one of the best winter populations of woodcock in the Southeast.

A small deer herd that already inhabited the area was given a big boost last spring with the release of 30 deer at four different sites. However, deer hunting will be delayed several years until the herd reaches a harvestable population.

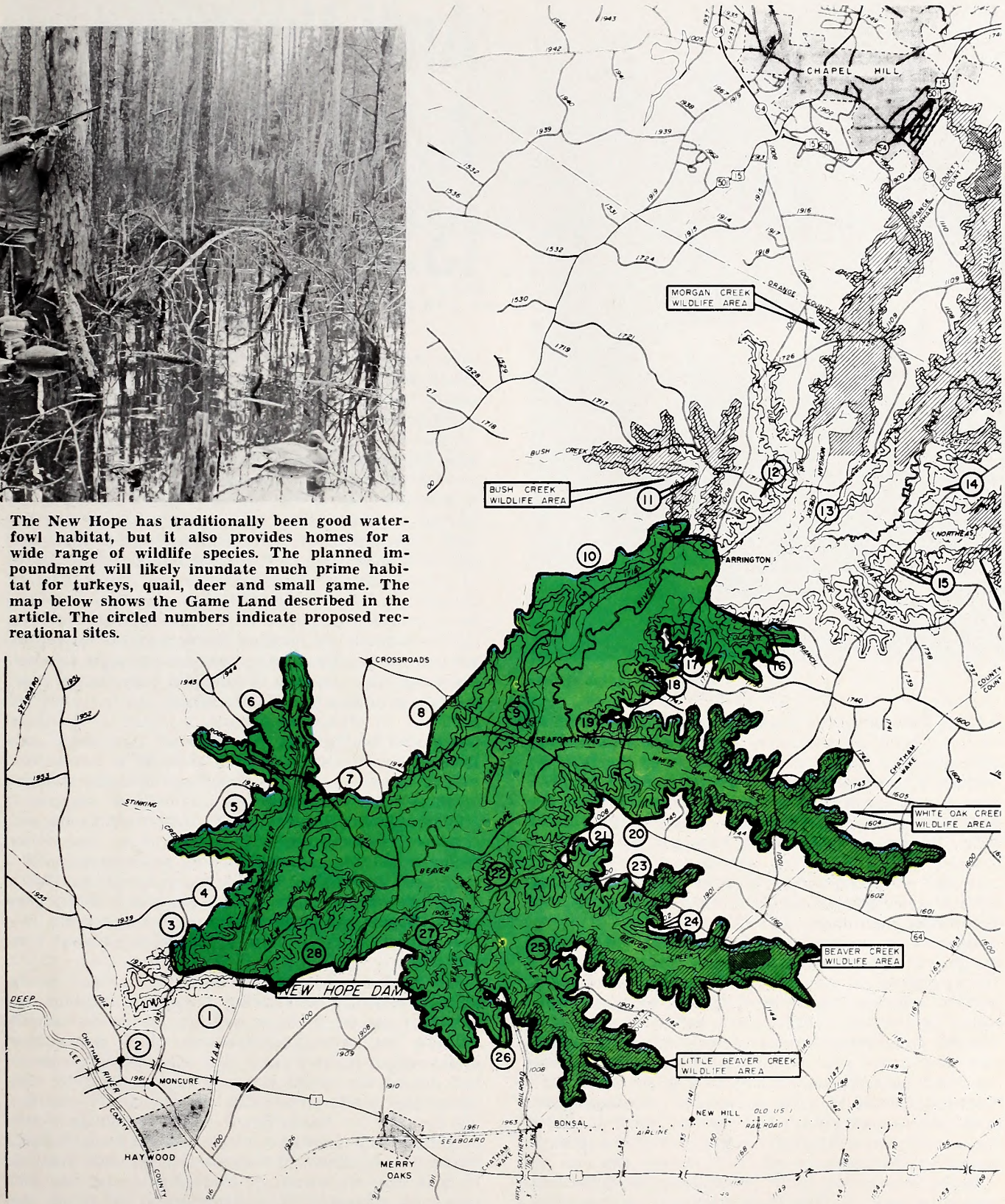
Larry Warlick, assistant chief of the Wildlife Commission's Division of Game, said the area will be developed for both small and big game hunting. The first step toward that goal was taken last summer when abandoned farm fields in the area were cleared and planted in wildlife food patches. According to Warlick this will improve the habitat for such small game as rabbits, quail and dove.

In the past, the New Hope Creek bottomland, in combination with the Haw River, has provided excellent habitat for waterfowl such as black ducks, wood ducks and mallards. The potential of the area for waterfowl hunting will be developed even further through the construction of small subimpoundments. Low lying areas will be planted with millet then flooded when the plants reach a certain stage of maturity. Water levels suitable for feeding and resting waterfowl will be maintained in the ponds through the use of flood control structures.

Although it is designated a "game land," the area will also offer some good fishing. Numerous farm ponds scattered throughout the area will be managed to provide fishing for largemouth bass, bream, crappie, shellcracker, chain pickerel and catfish.

Despite all this potential, the promise of New Hope as a game land has a lot of "ifs" in it. Plans of the Corps of Engineers call for flooding the bottomlands to create a 14,000 acre reservoir. Within the overall project area, wildlife mitigation areas have been designated in some of the bottomland of the streams which feed the lake. However, there is a strong likelihood that the development which will almost certainly follow impoundment will have an adverse effect on the wildlife areas. Many species of wildlife are adapted to bottomland habitat and once displaced will be unable to find enough new habitat capable of sustaining them.

On the other side, a suit brought by environmentalists seeks to have the area operated as a dry dam. This means a permanent reservoir will not be created but instead the dam will be left open to maintain stream flow. During periods of high stream flow, water will back up behind the dam but will result only in temporary displacement of wildlife. Dry dams have been operated in Ohio for many years and reportedly with good success from the standpoint of



The New Hope has traditionally been good waterfowl habitat, but it also provides homes for a wide range of wildlife species. The planned impoundment will likely inundate much prime habitat for turkeys, quail, deer and small game. The map below shows the Game Land described in the article. The circled numbers indicate proposed recreational sites.

flood control and maintaining wildlife habitat.

There is another side to a game land that is often overlooked and New Hope is no exception. Because of its wide range of habitat, the area is rich in nongame wildlife species. In particular, a great diversity of bird species thrive in the area's river bottom forest, a type of habitat which is rapidly diminishing from the scene. Thus, management of the area as a game land will result in enhancement for all wildlife that currently exists there.

In this time when wildlife is being crowded into less and less territory because of habitat losses, the New Hope Game Land holds promise for the future as a first rate recreational area, a breath of clean air and open space right at the back doorstep of one of the state's most heavily populated regions. ◆

PAINTING BY JOYCE RHAMES

Anti-Hunting: A WASTEFUL ISSUE

by Ed Kozicky and John Madson

• *The following is a paper originally presented as part of a panel discussion on hunting and anti-hunting that was held by the student chapter of the Wildlife Society at Louisiana State University, April 16, 1975. Free copies are available from the Conservation Department, Winchester-Western, East Alton, Illinois 62024. Reprint privileges are herewith granted.*

Today's surge of anti-hunting sentiment is nothing new; in one form or another, it has existed in this country for a long time.

Reasons for anti-hunting feeling have varied over the years. Sporthunting was once regarded as the idle pursuit of such ne'er-do-wells as Rip Van Winkle, and the only acceptable sporthunters were the well-to-do. By the early 1930s, with game supplies at a low ebb and modern conservation just getting underway, there was widespread sentiment against hunting and it was felt that it was only a matter of time before it ceased to exist as a sport. However, the Great Depression gave people other things to think about, and also temporarily changed hunting from a sport to a necessity. It put food on the table.

As the Depression eased, World War II focused attention on matters other than hunting. But then came Korea and Vietnam — long, bloody holding actions that wearied the public of killing and provided new reasons for opposing recreational hunting.

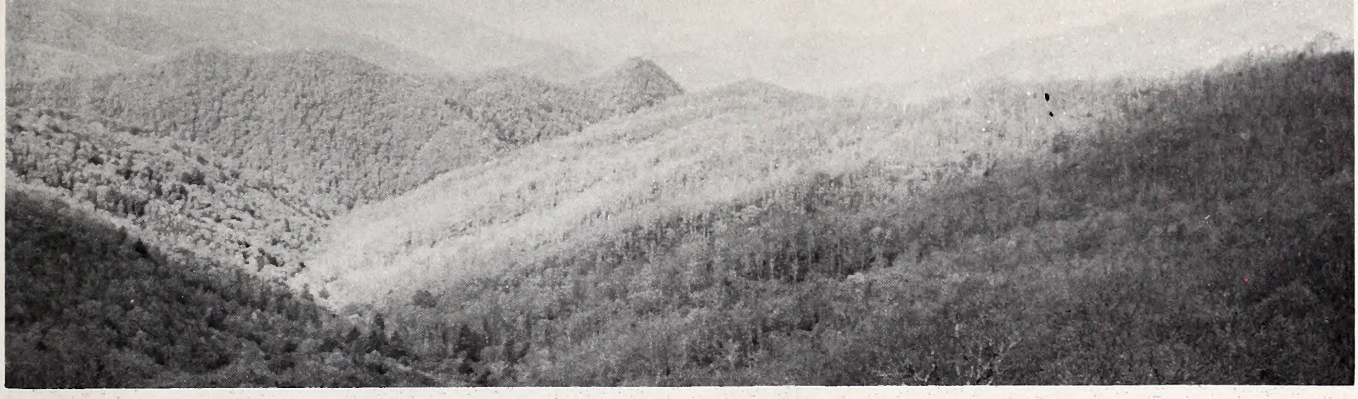
At the same time, the period after World War II saw a shift from a rural to an urban-oriented society. Hunting is basically a rural art, and Americans were growing away from their rural traditions. How many people today have ever helped their fathers butcher hogs, cattle or chickens for family use? As we became more urbanized we abandoned homey skills and the traditions of those skills. To millions of Americans today, the rural art of hunting is as obsolete as the quilting bee.

Then came the miracle age of electronics. The outdoors could be brought into the living room through a picture tube, and Disney film productions lost little time in doing so. A vast Sunday evening audience was riveted to the Disney version of wildlife. Starting with a proven formula for success — the humanization of wildlife with such cartoon characters as Bambi — the Disney studios went on to depict Mother Nature as a kind old grandma who provides a peaceful and idyllic existence for her charges. Little mention was made of nature's stern realities — of the survival of the fittest, the constant struggle for food and cover, and the rule of fang and claw. Many viewers began to feel that wild animals live in perpetual harmony in enchanted forests, a vision of freedom, peace and beauty that was missing from their own lives. In their new-found love of wildlife — whether real or imagined — they could not bear the thought of those wild creatures being hunted or trapped.

Others, having considered the matter a little deeper, confused conservation with preservation. Since they recogize wildlife conservation as something "good," they feel that killing wildlife must surely be "bad". They have never quite understood that wildlife conservation and the modern hunter are inseparable, nor that preservation is only a minor element of conservation.

We professional game managers have been partly at fault. During the growing interest in wildlife, we gave the public little or nothing to do to benefit wildlife. We have given them no direct action programs of their own, and the wildlife-loving public has longed for direct personal action. Consider the booming industry in songbird feeders and foods during the past ten years. But this wasn't enough. Some people, denied a positive role in wildlife conservation, began to champion a negative cause: anti-hunting. It is a natural cause to champion — spectacular, righteous, and certainly inflammatory and easily understood. These same elements were found in the early action taken by sportsmen, who attempted to increase game supplies with such obvious approaches as predator control, game farms, and indiscriminate stocking. Real progress wasn't made until emotional guesswork gave way to professional game management, and the real problem emerged: the need for adequate habitat.

Emotion is a prime ingredient in any crusade, but



One of the important facts often overlooked by anti-hunter groups is that hunters themselves have contributed heavily to the development of vast acreages of wildlife habitat. Without these areas, the status of wildlife populations, both game and nongame, would likely be in serious doubt.

if real progress is to be made, common sense must prevail and lasting solutions must be based on facts, not emotion. Anti-hunters are still in the first stage, with demogogues playing on emotion and prejudice in an effort to gain a following. For example, Cleveland Amory,[1] whose most notable contribution has been advocation of a "Hunt the Hunters Hunt Club" — the main ground rule of which is not to shoot a hunter within the city limits. Can such sick humor lead to reasonable solutions of social problems? Certainly not — it only adds fuel to the emotional fires on both sides. Yet, this self-styled "conservation expert" has found an opportune time to sell books and exploit TV talk shows even though he has no real field experience of any kind, nor any background in resource management. Such a person angers the dedicated hunter, and widens the gulf of misunderstanding between the hunter and the non-hunting nature lover.

It appears to us that the greatest gap between hunter and anti-hunter exists at the lowest levels of outdoor experience, knowledge and perception. The greater the lack of real outdoor mileage and perception, the greater this gap between hunter and anti-hunter.

The gap narrows as outdoor experience and understanding of nature increases, and the deeply involved hunter and the deeply involved naturalist may merge until they are indistinguishable. As he matures, the ideal sportsman is a balanced blend of hunter, naturalist, and conservationist. He's a man with many polished outdoor skills and abilities, and whose affection and knowledge of nature are matched by his efforts to conserve it. The same can be true of the non-hunting outdoorsman. We know skilled and experienced naturalists who have never hunted, but none of these are vociferous anti-hunters.

Still, such people are likely to wonder why men hunt at all. Many hunters wonder, too.

Some of the best answers have come from the eminent Spanish philosopher, Jose Ortega y Gasset,[2] who was intrigued by hunting as a basic human pursuit that is as profound as it is universal. As a philosopher, he felt that the needs of living men are shaped by a pre-history that is still urgent within them; he believed that essential human nature is inseparable from the hunting and killing of animals, and that from this comes that most advanced aspects of human behavior.

If we really try to understand our urge to hunt animals, we will find issues in favor of it. Among these, Senor Ortega y Gasset believed, is the fact that hunting is one of the pure forms of human happiness. It is a diversion in the most exact sense — a recapitulation of our racial youth, a return to fundamentals that we instinctively feel are free, basic and right. For 99 percent of our racial life we have been hunters, and the little time frame in which we now exist seeks to deny us the freedom in environment that made us what we are. No wonder we would rather hunt pheasants than shuffle papers in the office.

One of the great points in favor of hunting is that it's classic exercise in freedom. For many men, it is the truest, most personal exercise in freedom that is available today — and we support wildlife populations not just so we will have something to kill, but in order to have a reason to hunt. As Ortega puts it: "One does not hunt in order to kill; on the contrary, one kills in order to have hunted." Put another way we do not hunt for the joy of killing, but for the joy of living.

Our critics piously tell us that it is not necessary to kill to enjoy wildlife. Of course it isn't. Genuine hunters know that as well as any man — and certainly better than most. We're frequently told that the camera is a greater challenge than the gun, and that wildlife photography is a demanding pursuit that's worth all the study and effort that you can give it. But although wildlife photography is a special end in itself, it is not hunting in the real sense, and can never be. Ortega y Gasset believed that "camera hunting" for wildlife, in its most offensive form, "represents the maximum tradition of affected piety" — and suggested that wildlife photography relates to hunting as platonic love relates to the real thing. Each has special values, but neither can be wholly substituted for the other.

There is no real substitute for hunting — even though many of us could have a full life without ever killing another animal, and find plenty to do outdoors without shooting and killing. But without hunting, the salt would go out of autumn and life would take on a passive tameness.

We are told that man is ethical only when he does not kill, and that we should curb our instincts in the cause of reason and humanity, and stop killing animals. Yet, all of us know that it is the carefully reasoned "humanizing" of our planet that is doing the most deadly damage to wildlife. Genuine hunting, done ethically, is based on giving advantage to the animal in many ways. Humanization of our natural world, on the other hand, tends to ultimately disadvantage everything that is not human. The real hunter, seek-

ing freedom in a return to Nature as it really is, does far less damage to wildlife than the modern man who seeks to bend nature to his own ends.

The moral question of hunting or not hunting is locked in an impasse. The anti-hunter cannot understand how someone can love and kill game at the same time, nor why anyone would enjoy hunting. It is a paradox beyond his comprehension, and the hunter is rarely able to explain his actions in a lucid and rational way. Each extreme involves personal emotions that are difficult to convey to the other. But while the modern sporthunter may be unable to explain his actions to the satisfaction of the anti-hunter, should it really be necessary to do so? The prime consideration should never be whether it is morally "right" or "wrong" to kill animals, but whether or not the act of hunting jeopardizes the existence of the hunted species. And with that consideration, the act of modern sporthunting is not "wrong".

From early history, the hunter concerned himself with welfare of game, and developed certain traditions, laws and ethics that govern the taking of game. It is the hunter who willingly spends money in the form of licenses and special taxes to support game management. It was a hunter who saw the need for biological facts and principles by which to manage game — Aldo Leopold. It was a hunter who promoted ways to finance the biological research needed to manage game —"Ding" Darling.

In his brilliant book Game Management,[3] Aldo Leopold wrote:

"Hunting for sport is an improvement over hunting for food, in that there has been added to the test of skill an ethical code, which the hunter formulates for himself, and must live up to without the moral support of bystanders. That the code of one hunter is more advanced than that of another is merely proof that the process of sublimation, in this as in other atavisms, is still advancing.

"The hope is sometimes expressed that all these instincts will be 'outgrown'. This attitude seems to overlook the fact that the resulting vacuum will fill up with something, and not necessarily something better. It somehow overlooks the biological basis of human nature — the difference between historical and evolutionary time scales. We can refine our manner of exercising the hunting instinct, but we shall do well to persist as a species at the end of the time it would take to outgrow it.

Since modern game management has been established, with hunting based on biological surpluses of wildlife, no game species in North America has been severely depleted by sporthunting and many species have been brought from scarcity to abundance — antelope, wild turkey, deer, elk, and others. Revenues from sporthunting have also helped preserve wildlife habitat for the benefit of not only game, but for many non-game wildlife species.

The current wave of anti-hunting emotion will eventually spend itself, only to be renewed by future zealots. It's a pity that there is always a faction seeking to force its morality on another. If one doesn't like hunting, then one shouldn't hunt. But attempts to impose personal anti-hunting attitudes on others can only lead to bitter controversy and recrimination in which neither side really wins and wildlife is almost certain to lose. The time and effort spent in this conflict of hunter vs. anti-hunter would be far better spent in furthering positive conservation efforts. Our greatest objection to the anti-hunting move-

No game species has been severely depleted by sporthunting since the advent of modern game management, and many species have been brought from scarcity to abundance.

ment does not lie in any threat to sporthunting, but in the wasted time and effort that it entails.

Wildlife's greatest problem today is not controlled hunting, but uncontrolled use of environment. With an expanding world population and our commitments to feed other nations, with our problems of balance of trade and imported energy and trends to monoculture in agriculture and forestry, what of our wildlife resources? The developers, drainers, channelizers, polluters, dam-builders and agri-businessmen are busy, and wildlife gets many promises but few benefits. There is no shortage of problems confronting wildlife. On midwestern and southern floodplains, hardwood forests are being sacrificed on the altar of $12 soybeans. The Cache River drainage in northeastern Arkansas is a grim example of this — and the main defender of that irreplaceable waterfowl habitat is Dr. Rex Hancock of Stuttgart, who happens to be a duck hunter. The Garrison Diversion Project in North Dakota is another example, as is the South's pine forest monoculture that has been labelled "The Third Forest". All over the United States, quality wildlife habitat is being drained, cut, tamed, stripped, and re-shaped to make more money. The need for hunter and nonhunter to work together was never more important — and the chance to do so has never been better.

One of the commonest complaints of the virulent anti-hunter is that wildlife conservation is in the grip of hunting interests and that the non-hunter has no voice in wildlife management. And here again, we are wasting our potential.

The environmental 1970s have brought the cream of American youth into colleges and universities to pursue studies in natural resources. They come with a dedication that augurs well for our country's future. The sad fact of life, however, is that most public resource agencies, universities, and private efforts are already well-staffed with resource specialists. What is needed is new money to take advantage of this dedication and academic excellence. The skilled manpower is available, and the time is ripe for important new management programs — particularly programs for non-game wildlife species.

• **continued on page 27**

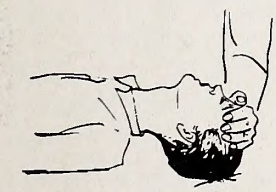
Fun to Learn

BY ED JENKINS

Following a boating accident or sudden illness on the water, a victim's life may depend upon the knowledge of first aid procedures of those closest to him. Many lives are saved each year by immediate first aid attention victims receive before professional medical attention is available.

The following brief guide should not be substituted as a completed course in first aid. Anyone frequently on the water, camping, hiking or hunting in sometimes remote locations should seriously consider taking a first aid course offered by the American Red Cross or Civil Defense.

Artificial Respiration Mouth-to-mouth resuscitation is the most effective way to restore normal breathing. A person may not be dead just because he stops breathing or his lips, tongue, and nails turn blue. Don't waste time moving the victim to shore or going for help. Begin mouth-to-mouth breathing immediately. It will not hurt him, and it can save his life.



TILT HEAD SHARPLY BACKWARD.

LIFT JAW UPWARD AT ITS ANGLES.

COVER BOTH MOUTH AND NOSE. BREATHE INTO CHILD.

REMOVE MOUTH TO PERMIT EXHALATION

Bleeding Bleeding from wounds can usually be stopped by applying direct pressure to the wound. A clean cloth should be placed over the wound and bandaged snugly into place. If it becomes soaked with blood, more layers of cloth should be added without removing the original dressing. If an arm or leg is bleeding severely, but is not broken, it should be elevated while applying direct pressure to stop the bleeding. Treat victim for shock.

Broken Bones Keep broken bones from moving. The limb should be supported or splinted in some manner. Never move the victim any more than necessary. If the person in the water is suspected of having a broken back or neck, do not remove him from the water. The water will act as an excellent support until trained medical personnel arrive at the scene. If transportation is absolutely necessary, use a firm, full-length support such as a door, surfboard or picnic bench.

Burns Burns that are not serious should be immediately placed in cold water. Do not apply water, ointments, sprays or antiseptics to severe burns where the skin is broken or charred. Serious burns should be covered with a dry, sterile dressing. Avoid using gauze and soft materials which might stick to the burn. If medical attention will not be available for thirty minutes or more, give cool or lukewarm water to the victim if he is conscious. Treat for shock.

Eye Injury If object cannot be washed out by tears or flushing with water, cover both eyes to avoid any eye movement and get medical attention immediately.

Fish Hook If the hook has not penetrated deeply enough to allow the barb to catch, back the hook out. If the barb is embedded, seek medical attention. If medical attention is not available, push the hook through until the barb protrudes. Cut the hook either behind the barb or at the shank, and remove the hook. Clean and bandage the area. A physician should attend to the wound as soon as possible.

Heart Failure Lay victim on his back; loosen collar and clothing. Keep the victim quiet and as comfortable as possible. Treat for shock. If breathing stops, begin mouth-to-mouth resuscitation. Get medical attention immediately.

Heat Exhaustion The symptoms are paleness, profuse sweating, dizziness, weakness and nausea. Body temperature will be normal. Get the victim out of the sun into the shade. Loosen clothing and cool by fanning or wiping with a cool, wet cloth.

Heat Stroke Symptoms are the opposite of heat exhaustion. Skin will be dry, reddish, and hot to the touch. Victim may lapse into a coma. Heat stroke is very serious. Cool the victim immediately. Sponge with water or water and alcohol mixture. Get medical attention immediately. If breathing stops, begin mouth-to-mouth resuscitation.

Seasickness Stay in the fresh air and breathe deeply. Don't go below deck to lie down. Stay busy and move about. If vomiting, drink water afterwards. If one has a tendency to become seasick, motion sickness medicine is available at drug stores. Follow directions on container.

Shock Anytime a person has been injured, he will suffer some degree of shock. Symptoms may be paleness, clammy skin, irregular shallow breathing, fast weak pulse, eyes look vacant and lack luster, and possibly unconsciousness. Have the person lie down and remain quiet. Be calm; reassure the victim by talking to him. Keep him comfortable. If cool, cover victim to keep him warm but not perspiring. If breathing is regular and no chest injuries exist, elevate the feet. Should medical attention not be available for thirty minutes or more, give the victim cool

• **continued on page 27**

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Second Portion of Bow Season for Deer

October 17-November 12 is the second season for the bow hunter on deer. However, the areas of the state which are open during this period are specified central and northwestern counties, and portions of these counties. Please take special note of the current "Hunting and Trapping Regulations" which refer to this season. A Primitive Weapons Hunting License is required for bow hunting.

Many Hunting Seasons Begin

October 13 marks the opening of many hunting seasons in North Carolina, including bear, deer, wild boar, raccoon, opossum, squirrel and ruffed grouse. Specific dates and open seasons and other details should be noted in the current "Hunting and Trapping Regulations." Central and western sections open for deer hunting on November 24. There is no open season on fox squirrels.

Wildlife Artists Take Note

The Seventh Annual North Carolina Wildlife Art Exhibit is scheduled for November 20-22 in Raleigh's North Hills shopping center. Artists interested in exhibiting work should contact George Sherman, 4214 Boxwood Road, Raleigh, NC 27612 at once.

Changes in State Fair Exhibit

A totally different exhibit is planned by the Wildlife Commission for this year's State Fair: it will be in the Industrial Building south of Dorton Arena rather than the outside location used in the past few years.

Fishing Regulations Hearings

Public hearings to consider changes for the 1976 fishing regulations are scheduled as follows:

September 29, 1975	Asheville	Buncombe County Courthouse	7:30 p.m.
October 1, 1975	Salisbury	Rowan County Courthouse	7:30 p.m.
October 2, 1975	New Bern	Beaufort County Courthouse	7:30 p.m.

- Letters
- Comments
- This & That

BACK OF THE BOOK

License Buyer

● As you might suspect, Wildlife Protectors run into all sorts of people. Some are good sportsmen, some are not, but every once in awhile the boys in green meet someone truly memorable.

If you don't believe that, ask Jim Twiford. Jim is a Wildlife Patrolman and on one Saturday last July, he approached a man who was listening to a chorus of fox hounds in the distance. The man's license identified him as R. V. Biggers, Charlotte, born October 17, 1894.

"I explained to him that he was eligible for a free lifetime license because of his age," said Jim, "but he just smiled and began pulling out licenses."

"I'm not a rich man," Biggers said, "but I've always been behind the work done by the Wildlife Resources Commission and felt I should at least help a little by buying my license."

Biggers then spread out licenses dating all the way back to 1943.

Jim Twiford's reaction? "We sure appreciate the support of sportsmen like Mr. Biggers," he said. That goes for all of us.

Mr. R. V. Biggers of Charlotte, shown here with a couple of tired hounds, displayed quite a batch of hunting licenses dating all the way back to 1943. Not many of us could do this. We're grateful, Mr. Biggers.

The ABC Of A Summer Pond

This is the title of a new book written and illustrated by Judith C. Friedman, and photos by John Dommers. It is designed for children five to nine, but youngsters of all ages will find interesting things in it. Combined with a trip or two to a local pond, this book should form the basis for a better understanding of our environment and will serve as a springboard for further examination of the ecological problems facing each one of us.

It's published by Johnny Reads, Inc., Box 12834, St. Petersburg, Florida 33733; paperback, $4.50; hardcover, $9.50, with discounts for quantity purchases.

Observations

John S. Edwards of Maiden, N. C., sent us some of his observations of wildlife in eastern Catawba County for the period of November 26, 1974 - January 21, 1975. The observations, he tells us, took place in an area some five to six miles in circumference and over a period of five to six hours each day covered. During a total of 26 days, he saw 10 pileated woodpeckers, and heard a total of 28. October 17 was the "peak" day with three sightings.

Mr. Edwards saw a total of 341 squirrel nests in 14 different species of trees. There were 130 in oaks, 121 in pines and the remainder scattered over the other species.

Maybe not earthshaking, but it does indicate an interest in wildlife and each bit of information and observation is important when viewed as parts of a total.

Every Little Bit

Dear Sir:

My name is Brad Donoff. I am 12 years old and I love wild animals. When I grow up I hope to become a mammalogist. My dad went to N. C. and he got some of your stuff because you had a big convention in a hotel. I read it all and decided to start a campaign so I tried to raise money but only got $2.03.

Brad Donoff,
Hamliton, Ontario, Canada

The Wildlife Resources Commission recently presented a check for $9,467.00 to the N. C. Chapter of Ducks Unlimited. Accepting the check is N. L. "Skip" Dunn of Winston-Salem, 1975 president of Ducks Unlimited in North Carolina. The Commission's executive director Clyde Patton (right) made the presentation. Reid Jones, Raleigh (left) and Borden Hanes of Winston-Salem are also shown. This money represents $1.00 derived from each of the nonresident season hunting licenses and the six-day nonresident hunting licenses sold by the Wildlife Commission during the 1974-75 hunting season. The money will be used for the acquisition and improvement of sumber breeding grounds of waterfowl.

National Hunters Association

Based in Eagle Rock, N. C. is a new organization devoted to protecting America's hunting heritage:

* By demanding adequate game controls and hunting laws
* By harvesting game which helps keep nature balanced
* By maintaining your rights to use and own firearms
* By introducing the youth of America to the wonders of hunting
* By providing our varied state conservation departments with

our organized moral and political supports and encouragement in the promotion of good conservation practices.

Benefits are:

* *SPECIAL BUYING PRIVILEGES — You buy direct from overseas manufacturers of hunting, fishing and all sporting goods.*
* *HUNTING INFORMATION SERVICE*
* *CAR AND TRUCK RENTAL DISCOUNTS*
* *AIR TRAVEL DISCOUNTS*
* *NHA HUNTING TOURS—WITH FAMOUS HUNTERS*
* *SPECIAL DISCOUNTS HUNTS IN U.S., CANADA, MEXICO — Bear, Deer, Elk, Moose, Duck, Geese Etc.*
* *PLUS — You receive embroidered NHA patch, membership card, and decals*
* *NEW PRODUCTS — You receive listing throughout the world*

The membership fee is $10.00 yearly. The address is:

National Hunters Association
Box 16, Eagle Rock, N. C. 27523

Outer Banks Conservation Ecology Mini-Summit

Sandpiper's Trace, near Manteo, North Carolina will be the scene of an "Outer Banks Mini-Summit," sponsored by the North Carolina Wildlife Federation, in cooperation with the National Wildlife Federation and the North Carolina Extension's Forestry Service, to be held October 16-19, 1975. Modeled after NWF's Conservation Summit program, the new *Mini-Summit* will give participants a chance to learn about and practice waterfowl identification, surf fishing, woodcarving, archery, art, and seafood and wildlife cookery, to name a few of the classes offered. Field trips will explore local history and culture.

We will offer an outstanding Youth Program for ages 5-8 and 9-13. The Youth Program will be conducted by Dr. Hollis Rogers, a biology professor at the University of North Carolina at Greensboro. These classes will be held so that the times will coincide with those classes held for adults.

Camping will be available at Sandpiper's Trace, Ltd. near Manteo, or motel facilities at the Ramada Inn at Nags Head. Buses will be provided to carry you back and forth from these facilities to the classes. Paul Ott, "Singing Conservationist," will be featured at our evening program. He is a most outstanding performer whom you won't want to miss. Tyson Laney, the Singing Wildlife Protector, will also provide entertainment at the evening programs.

The North Carolina Wildlife Federation invites everyone to attend this informal, fun, educational, and inexpensive ($15 per adult, 13 years and under free) experience. Preregistration is required, so send for more information and registration forms today: Charles R. Shaw, Conservation Mini-Summit, P.O. Box 10626, Raleigh, North Carolina 27605.

The National Whale Symposium

The great whales and their smaller relatives will be the subject of a national public conference at Indiana University in Bloomington, Indiana on November 9 through November 12, 1975. The National Whale Symposium will gather together experts from the social and natural sciences, arts, and humanities, and concerned citizens to consider the plight of whales and dolphins. Through such fields as international law, biology, literature, folklore, and music, the Symposium will explore the past and present relationships that man has had with the whales, and formulate what mutually beneficial relationships might be pursued in the future. The National Audubon Society is joining Indiana University and other national organizations in sponsorship. For information write: The National Whale Symposium, 605 South Fess Street, No. 3, Bloomington, Indiana 47401. Phone: 812 339-1484.

• **SILENT GUIDES continued from page 10**

index map indicates which areas of the state are covered by quad maps, the names of the quadrangles, what scales can be obtained, and when the area was last surveyed and mapped. Also on the index map is a list of local map dealers and Federal map distribution centers where the topographic sheets can be purchased.

The top sheet is the focal point for today's mapping. These maps have been around since 1882, when the USGS began mapping to collect information about government and private properties. In today's industrial culture, top maps are important in planning airports, highways and pipelines, and are important in hydrological research, soil conservation, reforestation and mineral research. These are the same maps that can give hunters and campers an inside line on where to pursue their activities.

"One of our problems," Wilder said, "is that much of North Carolina is not mapped, and some parts that are mapped are out of date and need revision. After you become familiar with an area you can pick out the features that have changed in an area since it was mapped."

It is my own experience that topographic maps are invaluable aids to the big game hunter who covers a lot of territory in search of the whitetail deer. One of the big buck's main advantages in eluding the average hunter is that he is totally familiar with the area in which he lives. If we are to believe what biologists tell us, a deer spends most of his lifetime in an area no more than one mile square. The serious hunter takes away a little of that advantage when he is totally familiar with the same area and in this, topographic maps are helpful.

When I was sixteen, I killed my first whitetail in the Blue Ridge Mountains of Virginia, sitting on a stand my father picked out. He had seen a strange formation of land caused by two creeks intersecting on the top sheets and later on aerial photos of the region we hunted. He investigated and found a decent amount of deer sign, and less that two weeks after he discovered the stand, I had a six-point buck.

To get the best use of your top maps, the larger scale maps, 1:24,000 or 7½-minute maps, are better for those who know where they're going to be and want to familiarize themselves with an area. The map scale is about one inch to 2000 feet. For location, smaller scaled maps of 1:62,500 or 15-minute maps will show an area of approximately 200-250 square miles.

Once you learn to read the symbols on maps and begin to get an idea of the added dimension given by a top map, your eyes will come to see the maps as having three dimensions. If you get this good at map reading, there should be no unfamiliar stream or gully on your favorite mountain or woodlot, and you will indeed have helped yourself immensely in your quest for better hunting or more camping and hiking pleasure. ▲▼

• ANTI-HUNTING from page 22

Millions are spent each year for the management of game species, but practically nothing is spent on the "poor relations" — the non-game wildlife. These are no less beautiful nor unique than our game species, nor less worthy of concern. We must broaden wildlife conservation to include all species of wildlife, and not just the favored few. Conservation of non-game wildlife has special meaning because it is every-day wildlife; it includes species that are adaptable to cities and suburbs if given half a chance, and which can be enjoyed by millions who never have the chance to spend time in forest, fields and marshes.

It is not reasonable to expect hunters to support the management of both game and non-game; although they provide millions of dollars for wildlife conservation, it is hardly enough, and our national wildlife is only getting half the attention that it deserves. Non-game wildlife management is an ideal course for non-hunters who are aching to do something but do not choose to support game species that will be hunted.

There's no good reason why action can't be taken. Most game management and research techniques can apply to non-game wildlife, and there is a whole new generation of trained, dedicated wildlifers anxious to find jobs in their chosen work. What is needed, obviously, is enabling legislation and funding. In a Winchester-Western booklet "A Law for Wildlife,"[4] we have discussed various ways to fund non-game wildlife programs.

Instead of wasting our efforts on the propriety of hunting — which is something like the old theological debate over how many angels can stand on the head of a pin — we should be working together with all types of wildlife and joining forces against the despoilers of natural environments. There's no better way of putting this than by paraphrasing one of

Wildlife's greatest problem today is not controlled hunting, but uncontrolled use of environment. Wildlife, hunted or not, must have a place to live.

Aldo Leopold's closing comments in "Game Management"[3]:

There is, in short, a fundamental unity of purpose and method between hunters and anti-hunters. Their common task of teaching the public how to modify economic activities for conservation purposes is of infinitely greater importance, and difficulty, than their current differences of opinion over hunting. Unless and until the common task of wildlife conservation is accomplished, the question of hunting is in the long run irrelevant.

LITERATURE CITED

1. *Amory, Cleveland.* 1974. Man Kind? Our Incredible War on Wildlife. Harper & Row, New York, 372 pp.
2. *Ortega y Gasset, Jose.* 1972. Meditations on Hunting. Charles Scribner's Sons, New York, 152 pp.
3. *Leopold, Aldo.* 1939. Game Management. Charles Scribner's Sons, New York 481 pp.
4. *Conservation Dept.* 1972. A Law For Wildlife. Winchester-Western Division, Olin, East Alton, Illinois, 20 pp.

• STEM TO STERN from page 23

or lukewarm water if he is conscious and not nauseated. Never give a victim alcohol to drink.

Sunburn Aspirin can be taken to reduce pain and inflammation. Soak in a bath of oatmeal bath preparation (available at drug stores). After burning subsides, a skin moistening lotion can be used to reduce dryness and peeling. Seek medical attention for severe sunburn. Prevent sunburn by using a sunscreen lotion and wearing protective clothing. Wear sunglasses to protect eyes from sun and bright glare.

"What if I give first aid attention to an injured person then later he tries to sue me?" one may ask.

The Federal Boat Safety Act of 1971 has eased this situation by declaring "Anyone who gratuitously and in good faith renders assistance at the scene of a vessel collision, accident, or other casualty without objection of any person assisted, shall not be held liable for any civil damages as a result of rendering of assistance or for any act or omission in providing . . . medical treatment where the assisting person acts as an ordinary, reasonably prudent man would have acted under the same or similar circumstances." ▲▼

ADDRESS CHANGE NOTIFICATION

Name_____

Old Address_____

_____

_____

New Address_____

_____

_____

Zip Code_____

IMPORTANT:

Enclose present Address Label

Please notify us promptly of change of address.

Use this blank to subscribe NOW — $2.00 a year

Add $1.00 for overseas postage

No stamps, please

WILDLIFE IN NORTH CAROLINA **New ☐**

325 N. Salisbury St., Raleigh, N. C. 27611 **Renewal ☐**

I enclose $_____; send me WILDLIFE IN NORTH CAROLINA for_____years starting with the earliest possible issue.

Name_____

Street or Route_____

City_____ State_____ Zip Code_____

Due to rising production and printing costs and likelihood of periodic increases in the subscription price for WILDLIFE, a limit of FIVE YEARS is being placed on new and renewed subscriptions.

TRIBUTARY TO WILDCAT CREEK
DOUGHTON PARK

PHOTO BY CHRIS TURNER

Leaves of Autumn

Leaves of autumn drifting down,
Softly to the damp cold ground;
Dead leaves hued in colors bright,
Dance across the filtered light;
Above a dale, above a crest;
Searching for a place to rest.

Charles Swanso

STATLIBR* 1SAMPLE9999 1
DIV OF STATE LIBRARY *
109 E JONES ST
RALEIGH NC 27611

LITHO BY THE GRAPHIC PRESS, INC., RALEIGH, N. C.

ER
45
:39/11

Wildlife

IN NORTH CAROLINA

NOVEMBER 1975

NORTH CAROLINA STATE LIBRARY
RALEIGH

An Equal Opportunity Employer

STATE OF NORTH CAROLINA

JAMES E. HOLSHOUSER, JR.
GOVERNOR

DEPARTMENT OF
NATURAL AND ECONOMIC RESOURCES
JAMES E. HARRINGTON, JR.
SECRETARY

NORTH CAROLINA
WILDLIFE RESOURCES COMMISSION

ROSCOE D. SANDLIN, CHM. – JACKSONVILLE
JAY WAGGONER, V. CHM. – – – – GRAHAM
ROY A. HUNEYCUTT, SECY. – – – – LOCUST
W. K. ANDERSON – – – – – – – NEWLAND
WILLIAM C. BOYD – – – – – WINSTON-SALEM
WALLACE E. CASE – – – – HENDERSONVILLE
HENRY E. MOORE, JR. – – – – – – CLINTON
DEWEY W. WELLS – – – – – – – – CAMDEN
V. E. WILSON, III – – – – – ROCKY MOUNT

CLYDE P. PATTON
EXECUTIVE DIRECTOR

RICHARD B. HAMILTON ROBERT B. HAZEL
ASSISTANT EXECUTIVE DIRECTORS

DIVISION CHIEFS

REX GARY SCHMIDT – – – – – – EDUCATION
CLIFFORD L. BAMPTON – – – – – – – GAME
W. DONALD BAKER – – – INLAND FISHERIES
DONALD E. CURTIS – – – – – PROTECTION
CHARLES R. FULLWOOD, JR. – MOTORBOATS
AND WATER SAFETY

The Editor gratefully receives for publication news items, articles, and photographs dealing with the North Carolina out-of-doors, but reserves the right to reject materials submitted. Full credit is given for all materials published.

Have you moved recently? Change your address promptly. Either send in an old mailing label from your magazine along with new address or type or print complete old label information exactly as it appears on your magazine.

WILDLIFE IN NORTH CAROLINA is published at the Wildlife Resources Commission offices, Albemarle Building, Raleigh, N. C.

Phone Number AC 919/829-7123

Second class postage paid at Raleigh, North Carolina 27611.

* * *

SUBSCRIPTION RATE — $2.00 per year (12 issues). Add $1.00 for overseas postage except APO, Canada and U. S. possessions. Back issues — $.25 per copy plus $1.00 minimum for handling and mailing; back issues may not be available. Send check or M. O. payable to WILDLIFE RESOURCES COMMISSION. Stamps cannot be accepted.. Any employee of the Wildlife Resources Commission may accept subscriptions, or send to WILDLIFE, Albemarle Building, 325 N. Salisbury Street, Raleigh, N. C. 27611.

Wildlife circulation this issue 70,000

Wildlife IN NORTH CAROLINA

The official publication of the NORTH CAROLINA WILDLIFE RESOURCES COMMISSION, Raleigh 27611. A monthly magazine devoted to the protection and restoration of our wildlife resources and to the improvement of hunting and fishing in North Carolina.

VOL. XXXIX NO. 11 NOVEMBER, 1975

IN THIS ISSUE

Salt Marsh
by An Painter ..... Page 4

Harold Brady—Wood Carver
by Derry Walker ..... Page 8

King of the Surf
by Wm. B. Black ..... Page 10

Resource-O-Gram ..... Page 13

Whitetail Buck
Painting my Bob Binks ..... Page 14

After You Bag Your Deer
by Ed Pearce ..... Page 16

Stem to Stern
by Ed Jenkins ..... Page 19

A Profile of Lake Waccamaw ..... Page 20

Fishing
by Jim Dean ..... Page 21

Saving the Red-Cockaded Woodpecker
by Stuart Critcher ..... Page 22

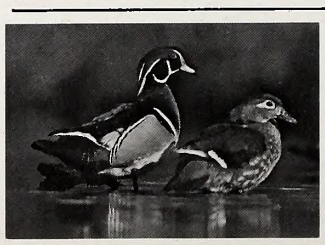
Woodcock Survey
by Tim Stamps & P. D. Doerr ..... Page 25

Hunter Safety Training
by C. J. Overton ..... Page 26

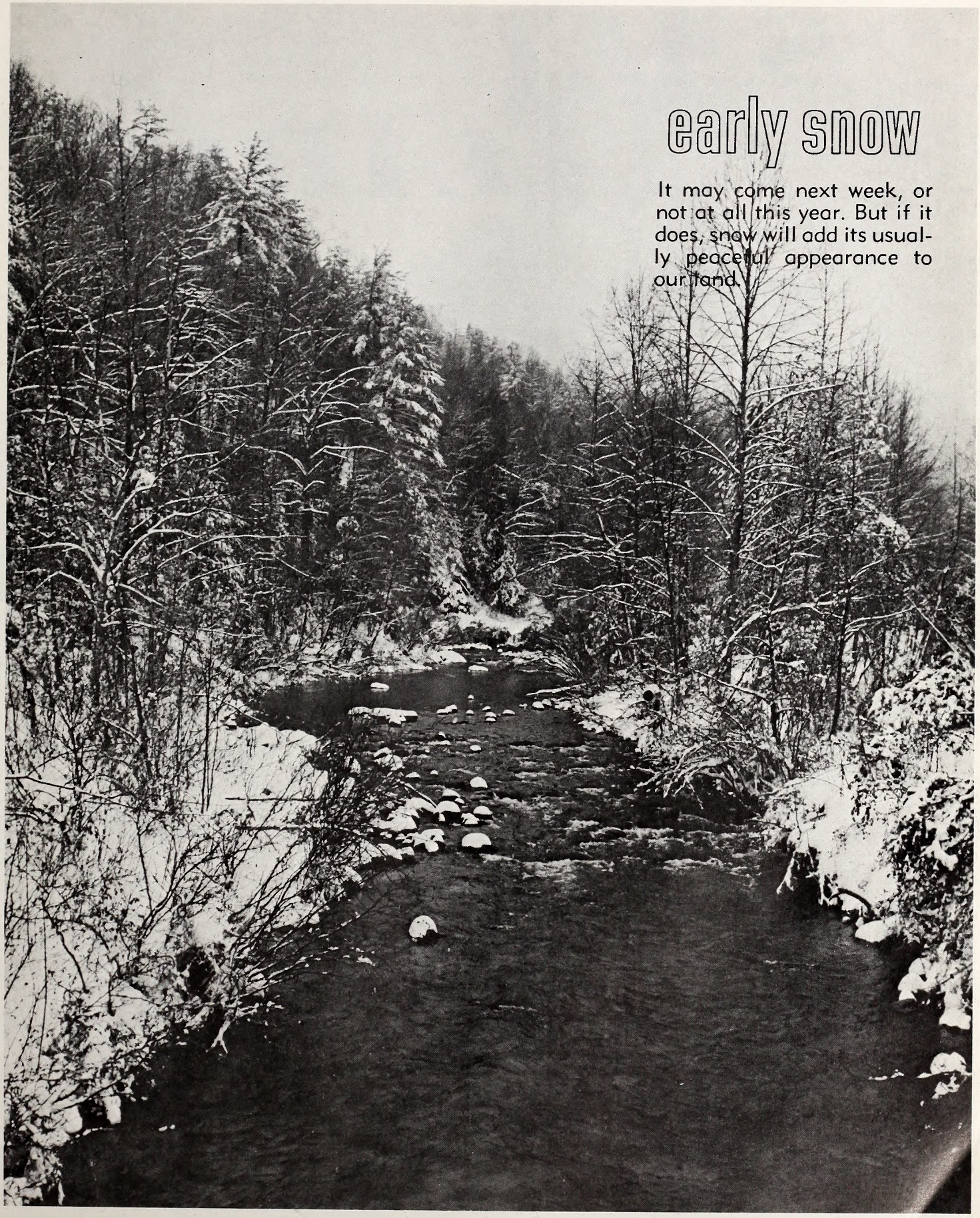
EDITORIAL STAFF

DUANE RAVER – – – – – – – – – EDITOR
JIM DEAN – – – – – – – ASSISTANT EDITOR
LUTHER PARTIN – – WRITER-PHOTOGRAPHER
TED DOSSETT – – – WRITER-PHOTOGRAPHER

An objective of all levels of government should be to achieve and sustain a balance of the social, ecological, and economic benefits derived from natural resources. Without such balance none of the factors on the scale will be worth weighing.



The afternoon sun catches a pair of wood ducks in the shallow water of their favorite pond. The male (left) usually steals the fashion show, but both are distinctively marked. The wood duck nests fairly extensively in our state, and makes good use of nest boxes. Photo by Eugene Hester.

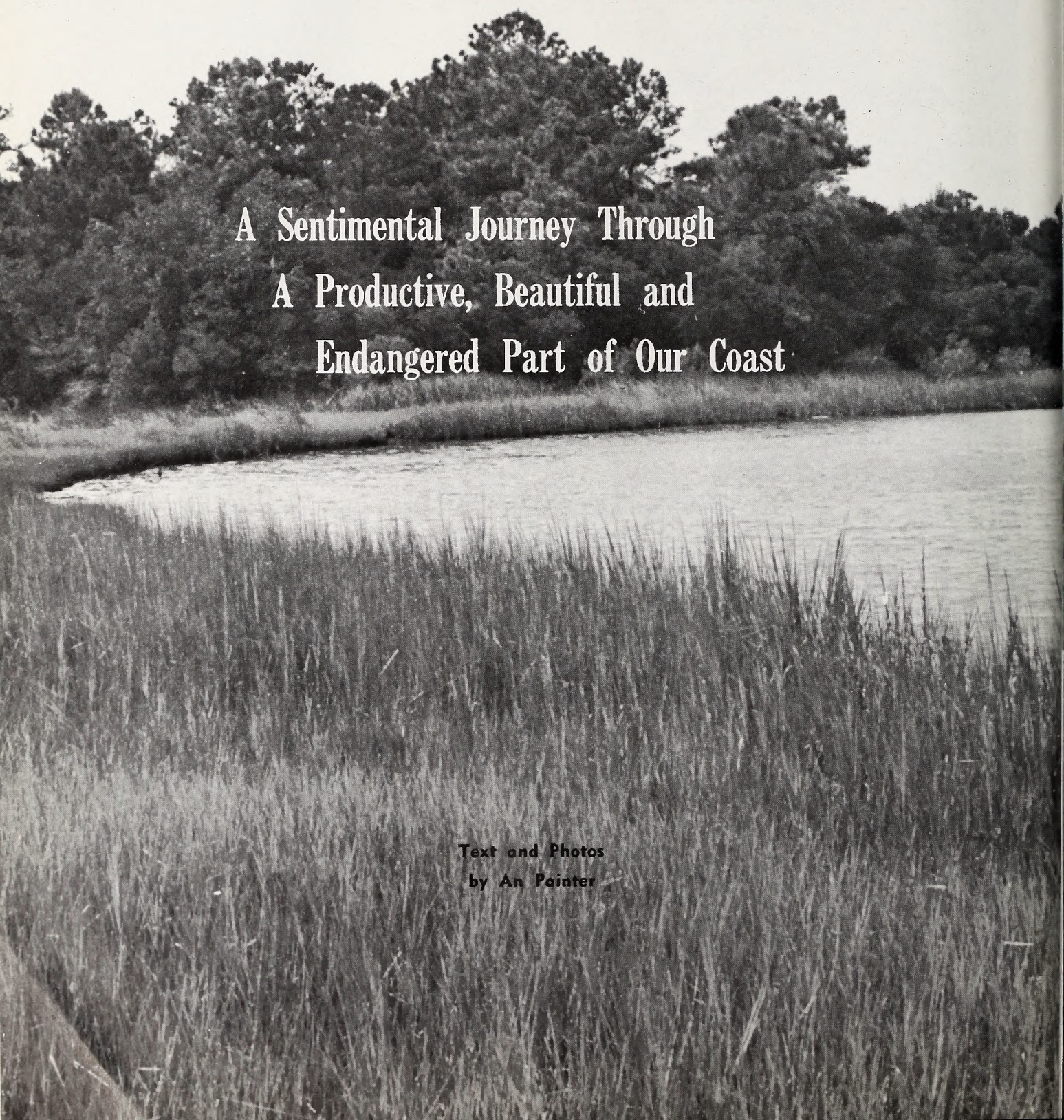


early snow

It may come next week, or not at all this year. But if it does, snow will add its usually peaceful appearance to our land.

PHOTO BY JIM DEAN

SALT MARSH



A Sentimental Journey Through A Productive, Beautiful and Endangered Part of Our Coast

Text and Photos
by An Painter

FOR the last six years I've had many opportunities to visit salt marshes. When I lived in New York this was scarcely possible; it Just Wasn't Done, and there were very few marsh areas left around my part of Long Island Sound.

In North Carolina there are thousands of acres of healthy salt marsh. So I've been going down to the coast for many years; trooping through the marshes, driving along rather desolate roads, chugging in shrimpers and zipzipping or putting in motor boats of various sizes. All of this to get into the marsh, to feel it on all sides at once.

The predominant marsh grass in the south is *Spartina alterniflora,* coarse cordgrass, a salt-resistant grass with thickish leaves growing from rhizomes which march straight out into water as salty as 30 parts per thousand. *Alterniflora* roots are very dense, and with the cycle of death and new growth, these roots will form thick boggy mats. Eventually this growth brings the marsh grass above the water level.

These are white ibis and stilts. The ibis often perch in trees bordering the marsh, and periodically fly in to feed. Stilts, herons, avocets and ruddy turnstones wade all through this part of Pea Island Refuge.

I first saw this kind of marsh with a friend who was collecting samples for an invertebrate zoology course at UNC's lab in Morehead City. We were in a tiny boat with an eight horsepower motor that continuously conked out, and with a lot of paddling and wading we got out to Town Marsh in Beaufort. There are meandering channels several feet wide throughout that marsh. They recurve endlessly, finally emptying into the Beaufort Channel. We followed some of these at midday, when the mosquitoes could have killed us if they wanted to. Maybe we were too dirty for their palates. After two hours, though, we had had enough.

These trees (left) on the edge of the spartina marsh, are themselves part of the maritime forest on Bogue Island: water oak, holly, cedar, live oak. They are one of the critical buffer zones for the salt marshes—supporting many of the marsh visiting animals.

But I really saw the meandering channels which undercut their way through these cordgrass marshes a year before that. David Walker is an artist. He was also a friend who painted a fantastic picture of just

In marshes with more grass than mudflat, the heads of Louisiana herons and egrets stick up just above the spartina tips. Even in this seclusion, the birds are alert.

this marsh, with brown-black mud edge crumbling to water underneath, and bright marsh grass shining above, but he wouldn't sell it to me. So I substituted the real thing and went off to see these channels for myself.

David Marshall was getting his Ph. D. by cutting another marsh grass and weighing it. He was doing a long-term productivity thesis, and measuring *Juncus* grass production levels in a particular marsh was the

This is about as close as the author got to an otter. Maybe next time she'll be lucky enough to see the sleek marsh mammal.

Juncus grass has the color of an old daguerreotype photograph. For miles at Cedar Island this is all you can see.

means to that end. He came back at noon every day from five hours in the marsh. First thing he did was go straight to the lab hose and hold it over his head for 10 minutes. Dave could talk for 15 minutes on the mosquitoes and flies, and he did, exclusively, while he washed off the mud. His marsh grass, *Juncus roemerianus,* is less salt-resistant and either grows in less salty marshes—10 to 20 ppt—or on higher ground not subject to normal tides. It is very sharp tipped, but beautifully long and straight.

Cedar Island is a sea of *Juncus* grass. From the road it is the only marsh grass visible. The National Wildlife Refuge here is a magic place. Here and there across miles of marsh a hammock rises up, breaking the continous line of *Juncus* grass across the horizon. These hammocks are higher ground, with trees such as loblolly pine, turkey oak, holly, and live oak.

Cedar Island Refuge and the surrounding marsh areas produce a tremendous amount of brown shrimp and blue crabs. People on channel shrimpers, the car-length boats sometimes seen parked in front of a house at Davis or Otway, ply through the random meanders of these marshes gigging for flounder, trawling for scallop, or shrimping or crabbing, whatever is good that season. These marshes are also breeding and nursery areas for penaeid shrimp, menhaden, and for many deeper water fish, as well as many wonderful birds: willet, plover, red-winged blackbird, dunlin.

Our salt marshes are the summer home of herons, egrets, and ibises. Geese, swans, and many different species of ducks winter here, at the southern limit of their range. Permanent sanctuary for some of these birds was the primary reason for establishing many of the protected marsh areas along North Carolina's coast.

Marshes have served as a range in another sense of the word, though, in that another marsh grass, salt meadow hay, is eaten by many wild herbivores and has been raised commercially as cattle fodder in some areas for years. For instance, before Long Island's marshes disappeared under concrete and compacted garbage, these marshes used to be harvested. In the 1900's at Sapelo Island in Georgia, Reynolds, the tobacco millionaire, turned over many of the island's acres just inland of the dune ridges to salt meadow hay production for his farm. *Spartina patens* is a round-bladed soft grass that's about 10-14 inches tall—half the height of *Juncus,* and bright green. *Juncus* is pale, or brown, and cordgrass is a dullish green. *Patens*

These marsh snails once disappeared from the Shallowbag Bay area on Roanoke Island. They're back now, and these waters are reopened to shellfishing. Other coastal areas haven't fared so well.

PHOTO COURTESY OFFICE OF MARINE AFFAIRS

bends gracefully with the breezes, and in large stands parts of it lie smacked flat as if someone had made a bed.

Deer, sheep, sometimes goats, and horses all graze on this marsh grass in winter. When it is in bloom, in late summer, and a breeze catches it, the tips bend over and sparkle for acre after acre. From the bridge to Beaufort looking across to the fish-rendering plant I have often seen this—wave tops and grass tips sparkling sunshine. And again at Swansboro, on the way to Hammocks Beach.

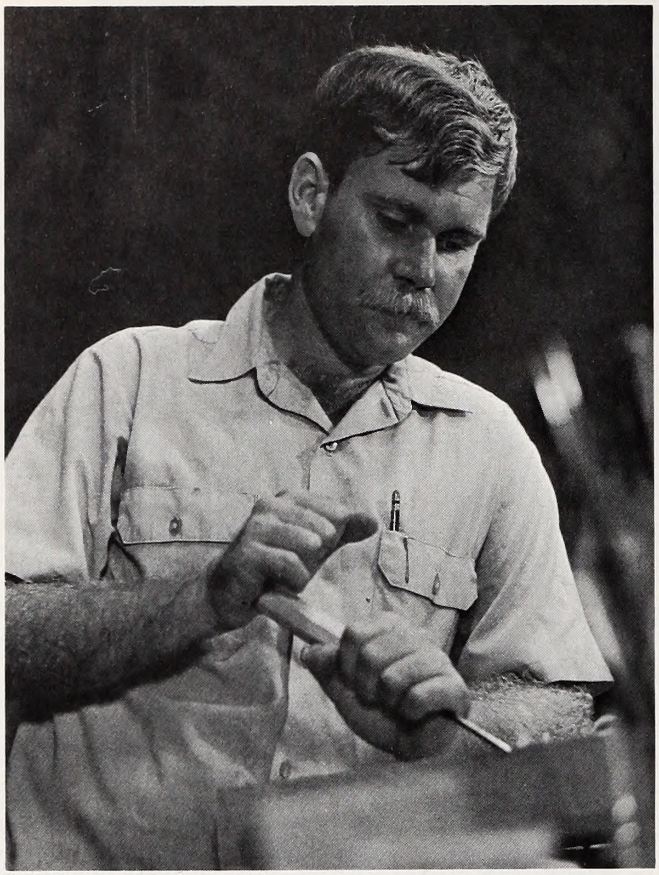
In Bogue Sound along the channel approach to Bear Island the *alterniflora* mats are three and four feet thick. This grass is 10-14 inches tall and its roots are at least partially submerged. It withstands boat wakes of two feet and tides of three feet in the channel to Hammocks Beach. Above the tops of the grass the occasional white heron head bobs up for a quick look around.

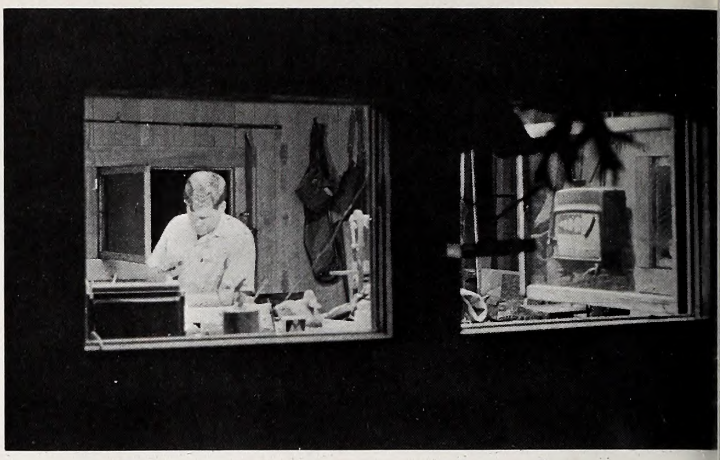
The long toes of herons and other wading birds help distribute their weight so they don't sink in quite so quickly as I do when I crawl out on a not-too-wet salt marsh. Sometimes I step in the wrong place and stick in nasty-smelling mud up to my knees. At that time the flies have me at their mercy, because I want to keep my hands dry in order to work the cameras, but I also want to get out of the mud, so I simply cannot spare a hand to beat off these tabanid flies. And they are vicious—green-headed with amber and black wings—fast too.

After so much hardship you might wonder what the reward is. It's not for everybody, I'm sure. A salt marsh produces more available food energy per acre than the most intensively cultivated wheat field. The reward is silence—silence over acres of space. Not that marshes are quiet, though. Cicadas and crickets and birds and leaping mullet are very noisy. The salt marsh is a buffer between regions of dynamic waves and tides and still water; between habitats of high salt influence and lower salt influence; between oceans and rivers. The silence I speak of is as much an inner reflection of an outer harmony as it is freedom from cars, machines, telephones, airplanes, or shouting people and crashing surf at the beach. The salt marsh establishes itself rapidly on mudflats and can grow to maturity in three years on dredge spoil areas.

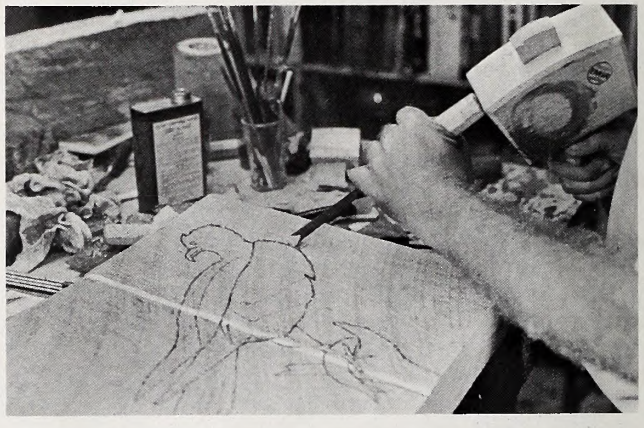
Other rewards would have to include the birds and the smaller wildlife—snails, clams, crabs, dragonflies and grasshoppers—which abound here and nowhere else. If the productivity of a salt marsh were valued in dollars, an acre would have been valued at $83,000 in 1971. Raccoons, skunks, otters, ospreys, bears and bald eagles all live in our salt marshes. One of the rewards for trekking into black muck to the knees and getting stung and sunburnt is being able to remember, later, that the salt marsh is one of the state's magic places.

SALICORNIA—GLASSWORT





Late night woodcarving is a standard practice for Harold Brady. Below, he makes the initial cut on an intaglio osprey. The mallet is only used for initial cuts; thereafter palm pressure (left) drives the tool. The wood is eastern white pine.



Harold Brady—the Sand Hills Wildlife Wood Carver

OUTSIDE Harold Brady's Southern Pines workshop, the twentieth century wheezes along, stamping out mass-produced goods in every direction. Car lots are bloated with assembly line wonders, shelves of department stores display glittering duplications of goods for every imaginable physical need, and the ever present "tube" incessantly hawks products A, B, and C for headaches, when in fact A, B, and C all contain pretty much the same ingredients. It's difficult to find a one-of-a-kind thing . . . . an original.

Not so *inside* Harold Brady's Southern Pines workshop. No two Brady woodcarvings are exactly alike. That is part of the fascination for Brady himself, and it is certainly one of the reasons his work is rapidly gaining fans, in North Carolina and elsewhere.

His latest mallard duck carving is a good example: it was once a block of buckeye wood from a tree in the North Carolina mountains. When cut, the wood was air-dried for three years by a Maggie Valley lumber dealer who sold it to Brady along with other specimens—American linden or basswood or eastern white pine and so on. The block of buckeye which became a mallard, started out as a two-foot long, six-inch wide, seven-inch high piece which was cut from or near the heart of the tree. From 30 to 36 hours of carving following Brady's initial cut, it became a carved original which will decorate someone's den someday.

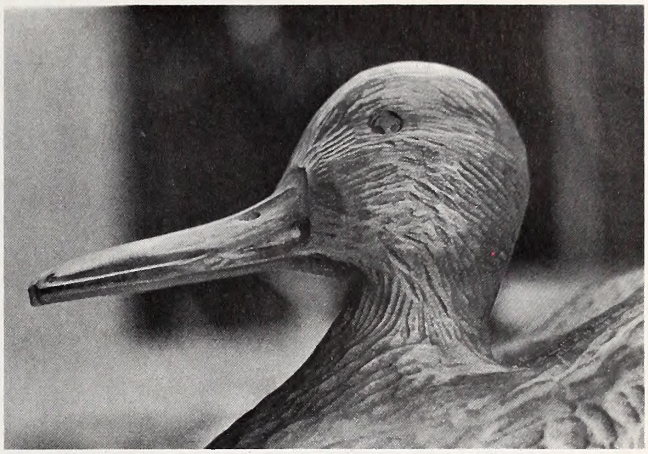
Brady's favorite subject is wildlife, and his favorite wildlife is waterfowl, which he researches through personal observation and by studies of drawings and photographs. Slogging through a swamp in search of waterfowl takes patience, but Brady does it and he has trained his memory to record fast and faithfully.

Harold Brady was born in Fayetteville December 1, 1946; from age two he lived in Raeford which is in Hoke County adjacent to Cumberland. He holds an A.S. Degree in Education from Fayetteville Technical Institute and a degree in aviation earned at Embry Riddle University, Daytona Beach, Florida. He is married to a school teacher, the former Cynthia Rowland, also a Raeford native. They have one son.

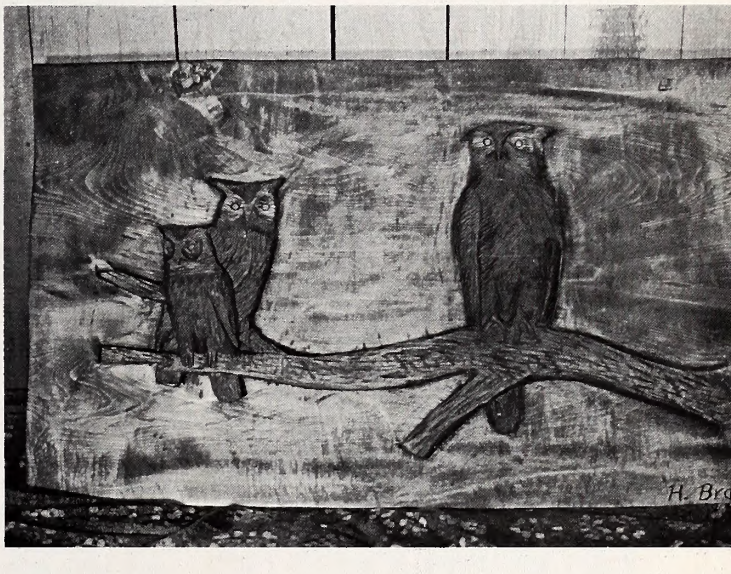
Cynthia, whom Brady calls "Miss Rowland," encourages her husband quietly and steadily—an asset the carver readily acknowledges. "She's a great lady," he says, "to put up with wood chips and late workshop hours."

"Miss Rowland" puts up with another Harold Brady characteristic: his housekeeping, or more appropriately, his shopkeeping. One is immediately ankle-deep in wood chips and powdery sawdust upon entering the Brady workshop. "Can't work in a sterile environ-

This mallard (above) rests on a block of buckeye on which its mate has been outlined by Brady. The Brady ducks below are destined for an Ocracoke shop. Left to right they are: shoveler, teal, ruddy, and a wood duck. Basswood, buckeye and redwood are used.



This close-up (above) of the mallard at left, shows detailed carving called "feathering." This is done after the bird is completely roughed out. These owls (below) represent intaglio or low-relief woodcarving. The eyes of the birds seem to "follow" the viewer as he walks by.



Text and Photos by Derry Walker

ment," the carver says; "got to have my books, drawings, tools and so on right where I can lay my hands on them." Whatever his grade on workshop tidiness, (and who cares?), the carvings that emerge from the chips and sawdust frequently strike awe in the visitor. Originals, all.

Not every block becomes beauty, however. Just outside the east shop window lies the "graveyard," where mistakes are flung, usually *through* the open window. Many a wildlife critter has scampered out of the path of a Brady reject, sailing through the blackjacks. Mistakes occur mostly when he makes one cut too many or when there is a problem with the quality of wood, Brady says.

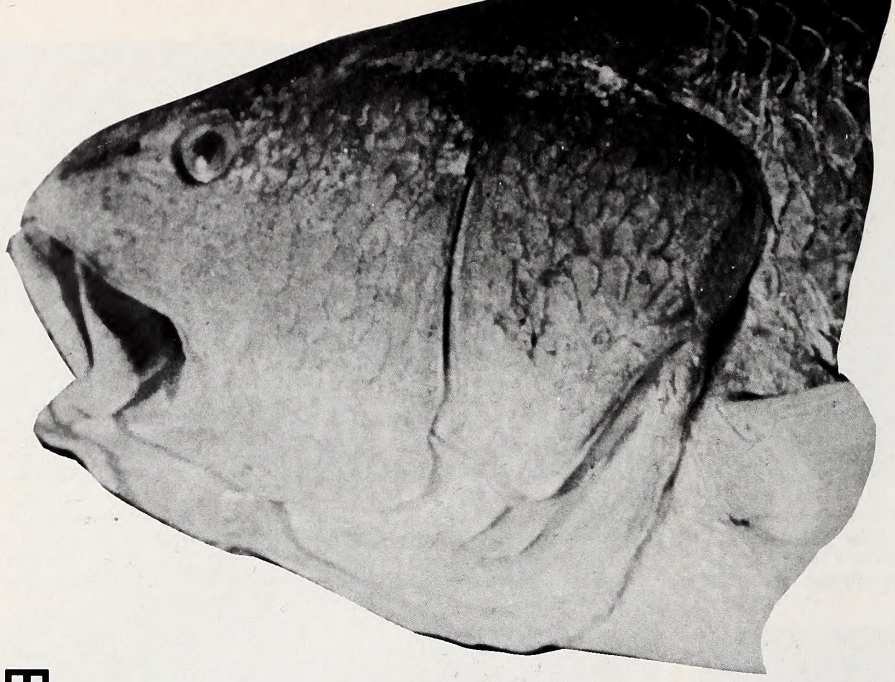
There are "shows" around for carvers, and Brady occasionally displays his work. He has shown his work at the Georgia Founders Day in Savannah, and at Fayetteville's "Sunday In The Square." He is very enthusiastic about his invitation to The Greensboro Christmas Classic—'75, which will be held in the Greensboro Coliseum December 6 and 7. The Greensboro show is an invitation-only meeting for carvers, and Brady calls it one of the best shows anywhere.

Brady's waterfowl carvings are examples of "in-the-round" work, and he states firmly that they are all one-piece carvings. Some carvers make heads and bodies separately, he says, and later glue them together, which eliminates the risk of ruining a piece when carving in the delicate neck area. Not Brady. His finished pieces are genuine one-piece products, and he is proud of that.

Intaglio or low-relief carvings are also among Brady's originals. This work involves undercutting in the face of a flat piece of wood so that the subject is gradually "raised." One of these features three owls whose eyes seem to follow the viewer as he walks by.

Future carving plans include the once faithful sidewalk ornament, the cigar store Indian. "I'm going to do it properly," Brady says. "My Indian will stand six feet tall." And it will if he says so. At 28, Harold Brady is a good woodcarver. He is his toughest critic, and plans to remain so. "Work that I did last year, I would throw away today," he drawls quietly, "and I'll probably be saying the same thing a year from now."

With that attitude in mind, and with a great many good years hopefully ahead of him, the Sandhills' Harold Brady will probably become what he refuses to call himself today—a genuine American Master Carver, producing from his island of wood that great twentieth century rarity—the "one-of-a-kind." The *original.*



King of the Surf

by William B. Black
Richmond, Va.

THE drag on my spinning reel clicked softly as it released about five feet of line and then suddenly stopped. My rod was arched toward the incoming waves, and it seemed as if time itself was at a standstill. There was no hard pumping or steady pull to indicate that a fish still held the bait in his mouth. What had pulled my line so softly, and why had it stopped? After several seconds of stand-off between myself and whatever, if anything, was on the other end of my line, my fishing instinct caused me to act. I made sure the line was taut, held the spool firmly with the index finger and thumb of my left hand and reared back with every ounce of energy I could muster.

The silence was broken by the screaming of the drag as line raced off the reel; the fight was on! I realized immediately that the fish was much larger than the small sand sharks we had been catching for the past two hours. The fish began to slow down after an initial run of 100 yards. Another angler had seen the fish roll on the surface and yelled to me that it was definitely a red drum.

I am a 27 year old businessman from Richmond, Virginia and spend most of my spare time engaged in some type of hunting or fishing. Weekends will usually find me on a farm pond in search of largemouth bass or on a charter boat in quest of the bluefish and rockfish that abound in the Chesapeake Bay — Decembers and Januarys are reserved for duck hunting — my mood and the thickness of my wallet are the determining factors as to what outdoor activity I'll be engaged in at a particular time. It wasn't until the spring of 1971 that I decided to try my hand at surf fishing. All of my reading seemed to indicate that the most productive surf fishing area within driving distance of my home was along the Outer Banks of North Carolina, especially the large island known as Hatteras with its famous Cape.

A friend of mine from Richmond, Clyde Davis, and I had talked about a fishing trip to Cape Hatteras for over a year, and I finally decided that the time had come. The second weekend in April, 1971, Clyde and I packed our gear and drove the 300 miles to Buxton, North Carolina, a small town some 12 miles north of the village of Hatteras. We learned in short order that we had made a wise choice as far as the fishing was concerned. Directly across from our cottage was a combination gas station and fishing information center called the Red Drum Tackle Shop. While unpacking our car we noticed that a large gathering of four-wheel drive vehicles and shouting fishermen had literally jammed the parking lot of the Red Drum Tackle Shop.

We walked across the street to mingle with the crowd and quickly realized that most of the people had not stopped for gas but rather to weigh fish and swap fishing stories. There had been a good run of 5-to 10-pound bluefish that afternoon, and everyone seemed to have scored. Reports also indicated that whiting, flounder and sea trout were being taken along the beaches and from the piers. Clyde and I were all ears. My attention was suddenly diverted to a man who was hoisting a huge fish onto the weighing scales.

Everyone gathered around the scale as it registered right at 40 pounds. The weight, powerful build and bronze color quickly identified it as a red drum. I had seen pictures of red drum in magazines, but my first encounter with the real thing made me green with envy—he was magnificent. Being the supreme optimist, I set my sights on returning to Richmond with nothing less than a citation red drum.

Clyde and I hit the beach early the next morning and found the fishing to be fast and furious. We filled a large cooler with whiting averaging a pound each. Also known as sea mullet or roundheads, these fish are real scrappers on light spinning tackkle and just as satisfying on the table. While we were using our lightweight rigs for the whiting and trout, we also bottom fished with our heavy surf outfits in hopes of catching a red drum.

As we did not have a four-wheel drive vehicle on our first trip, our angling was limited to the stretch of beach within walking distance of our cottage. Although red drum are caught all along the beaches of the Outer Banks, we learned from the locals that they are caught with greatest frequency at "The Point" below the Buxton Lighthouse and along the beach at the mouth of Hatteras Inlet. To reach either of these areas meant an extremely long walk in the sand carrying heavy fishing gear, an excursion neither Clyde nor I wanted to undertake. By Sunday afternoon we

were both dead tired. The warm sun and fast fishing had taken their toll.

As we were leaving Buxton for the return trip up the coast, we decided to gas up at the Red Drum Tackle Shop. Again we encountered a large group of fishermen swapping stories, a variety of fish protruding from coolers and, yes, several men standing in line to weigh the drum they had caught earlier in the day. That parting scene of those large bronze fish hanging from the scales was to haunt me for the next 12 months.

I spent the next year devouring every article I could find concerning the red drum. I wanted to know something about his feeding habits, the best time to fish for him and the proper tackle to use. The "where" had already been answered, for I experienced first hand that there is no better place to hunt for this giant than along the beaches of Cape Hatteras.

The red drum is known by a variety of names depending upon the size of the fish and the area you are fishing. He ranges from the barrier islands off Virginia's Eastern Shore in the north, southward along the East Coast to the tip of Florida and west into the Gulf of Mexico. He is known as the redfish to most Florida fishermen and runs smaller in size than his cousins to the north. A redfish in the 10 to 15 pound class is considered good size in Florida and along the beaches of the Gulf. The average size of the red drum caught in Virginia and North Carolina runs much larger, with fish of 50 pounds not uncommon. The current world record red drum was 90 pounds caught at Rodanthe, North Carolina on November 7, 1973.

Along the Outer Banks of North Carolina, this fish is called either a red drum or a channel bass, and he is further classified by weight. A fish that weighs under 25 pounds is called a puppy drum, and anything larger is considered a channel bass.

The red drum can be easily identified by its reddish bronze color and one or more dark splotches near the base of the tail. It is a powerful fish known for its long runs and bulldog fight. He won't tail-walk like a marlin or tarpon; he prefers to dive deep and hug the bottom. What he lacks in acrobatics, however, he makes up for with sheer strength and stamina.

The heavy run of red drum occurs twice a year along the coast of North Carolina, spring and fall. The spring run usually begins around the middle of April and peaks during the first week in May. The fall run begins in the first part of October and goes into November, with the peak normally occurring the last two weeks in October. Although many fish are caught during both the spring and fall runs, the largest fish seem to be caught with greatest consistency in the fall.

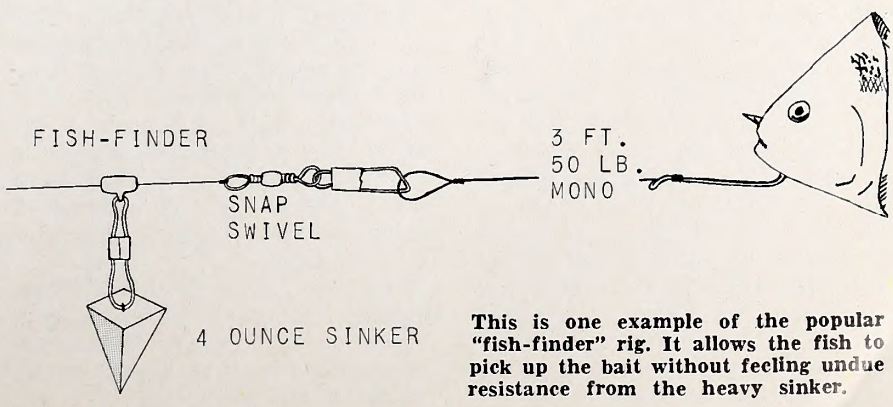
The red drum is a bottom feeder and comes close to shore in search of food during high water. It makes no difference whether it's night or day, the tide is the important factor in determining when to fish. Most drum fishermen agree that the best hours to fish for channel bass are two to three hours on either side of peak tide. I overheard a local fisherman say that the perfect time to fish for drum is during a high tide on a night when a full moon is shining.

I learned a great deal about basic tackle requirements for taking channel bass during that first trip to Hatteras. Most of the bass fishermen had been armed with heavy-action saltwater spinning outfits—rods varying from nine to 12 feet in length and open-faced spinning reels loaded with 20 or 30 pound monofilament line. Some of the old-timers were using "squidding" rods and conventional saltwater casting reels. I personally prefer spinning equipment as it is the easiest for me to cast. So I would suggest that you arm yourself with a medium to heavyweight spin-surf rig. I decided to purchase a Mitchell Garcia heavy action 10 foot rod and a Mitchell 302 spinning reel filled with 250 yards of 20 pound monofilament.

As previously mentioned, the red drum is a bottom feeder and is most often caught by fishermen using some variation of the well known fish-finder rig. A four to six ounce pyramid sinker is needed to cast your bait out past the breakers to the schooling fish and to hold it there in heavy currents. Standard hook sizes for red drum vary from 4/0 to 10/0, my preference being a 7/0 hook attached to three feet of 50 pound test leader. I attach the eyelet end of the leader to the clasp end of a large snap swivel. The line from the reel is threaded through the eye of the fish-finder, which carries the sinker, and then tied directly to the round end of the snap swivel. The fish-finder device allows the sinker to slide up and down the line instead of being tied directly to the line. The fish-finder keeps the sinker above the swivel while casting, and it allows a fish to run with the bait without feeling the weight of the sinker. The red drum will often spit out the bait if he feels too much resistance on his initial run.

Just a few words about the best bait to impale upon your hook. Fresh mullet or spot cut into chunks are standard baits used for drum in North Carolina. Both spot and mullet are oily and seem to attract fish. The head of a spot cut just behind the gills is excellent as it stays on the hook for a long period of time. Some drum fishermen use soft-shelled crabs for bait, but I prefer to eat them. Crabs are more expensive than most other cut baits and don't stay on the hook as well.

Armed with the tips we had learned from our first trip and the information we had read during the long winter months, Clyde and I made plans for our second trip to Cape Hatteras. We arrived in Buxton, North Carolina, on the night of May 5, 1972, and decided to turn in early so we could be fishing at



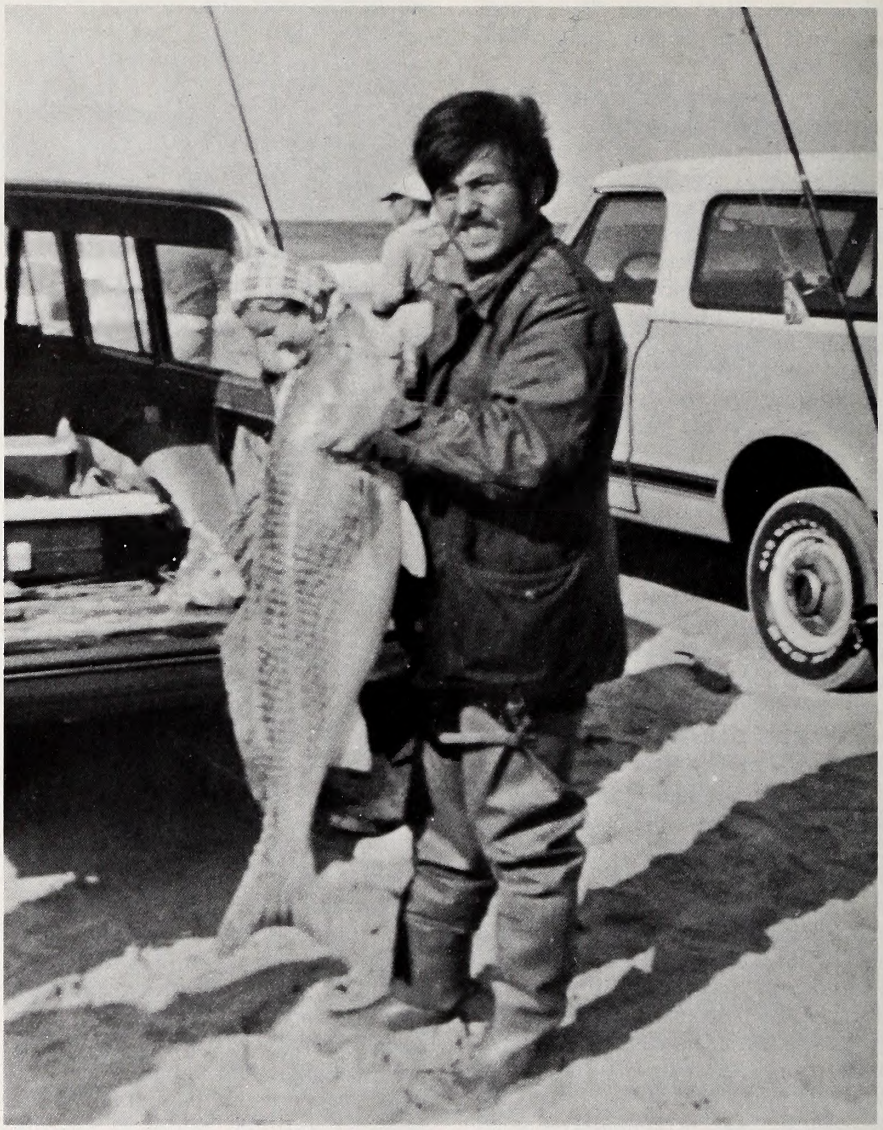
This is one example of the popular "fish-finder" rig. It allows the fish to pick up the bait without feeling undue resistance from the heavy sinker.

the crack of dawn. A friend of ours who happened to be in Buxton that weekend had offered to drive us to "The Point" the next morning in his Bronco.

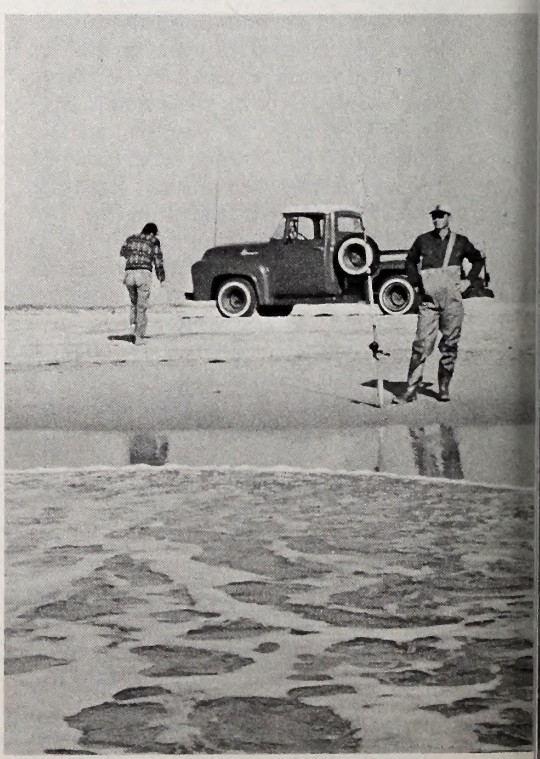
The sight of the sun rising above the turbulent seas off "The Point" was one of the most spectacular outdoor scenes I had ever witnessed. The temperature was in the low 60s and the wind was gusting out of the southwest. At least 20 fishermen were already standing in the surf when we arrived, many had spent the night. As I was preparing my gear, I happened to notice a large flock of feeding gulls moving toward shore. I realized that feeding gulls spelled bluefish, and many of the anglers were furiously changing their bottom rigs to Hopkins lures, a bluefish favorite. I decided to stay with my fish-finder rig and cut mullet, a combination that will work with either channel bass or blues. The blues never worked in close enough to shore, but that didn't dampen my spirits. I spent several enjoyable hours catching sand sharks one right after another.

The sound of the waves and the smack of the salt air had put me in a trance. I was daydreaming when I felt the slightest pressure on my rod tip. I heard the drag slowly release some line, and after several seconds of indecision, I set the hook. The initial run as described at the outset of this story was the beginning of a one hour fight with a fish I had dreamed about for over a year. Many times during the hour it seemed as if the fish would win the battle. I methodically pumped and gained line, but every time I felt I had him whipped he would spring alive and take another powerful run.

After 40 minutes I decided to tighten my drag very slightly as I didn't seem to be tiring the fish at all. Tightening the drag on a fighting fish is risky business, for you take the chance of putting too much stress on your line. It's a chance I had to take; I simply didn't have the strength to fight the fish much longer. I had caught many fish before, but none this big and strong on light tackle. After one last long run, my tightened drag began to take its toll. I felt him giving in as he rose to the surface and stayed there. He was still about 80 yards from shore, but I knew I had him coming. From there on out I used the force of the waves to help me bring the fish to shore. After an hour and five minutes, the fish was finally brought to gaff.



A fish any angler would be proud of: the author with his 43½ pound channel bass. Others are waiting for you along North Carolina's outer banks.



We threw the fish in the Bronco and headed for the Red Drum Tackle Shop. It was the first time in my life that I actually enjoyed standing in line. Several men were before me weighing some big blues they had caught. My fish went on the scale, and I couldn't believe my eyes—43 pounds, 8 ounces. A red drum over 40 pounds is a citation in North Carolina, so along with the beautiful fish, I received a memorable wall plaque to place beside my trophy.

Whether you chose to call him a redfish, red drum or channel bass makes no difference to me—in my book he'll always be known as the "King of the Surf." ⬍

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Endangered Animals and Plants Symposium

A symposium on endangered and threatened biota of North Carolina will be conducted November 7-8, 1975, at Meredith College in Raleigh. Registration is at 1:00 p.m. November 7 at Jones Auditorium on the Meredith Campus. There is a registration fee of $5.00. For further information, please contact John Cooper, N. C. State Museum of Natural History, PO Box 27647, Raleigh, N. C. 27611.

Invite Birds to Your Home

This is the title of an attractive publication recently produced by the Soil Conservation Service, U. S. D. A. The booklet gives specific suggestions on what plants to use to attract song and game birds to your yard, whether in the city or on the farm. It is beautifully illustrated. It sells for 75 cents from the Supt. of Documents, U.S.G.P.O., Washington, D. C. 20402.

Wildlife Art Exhibit

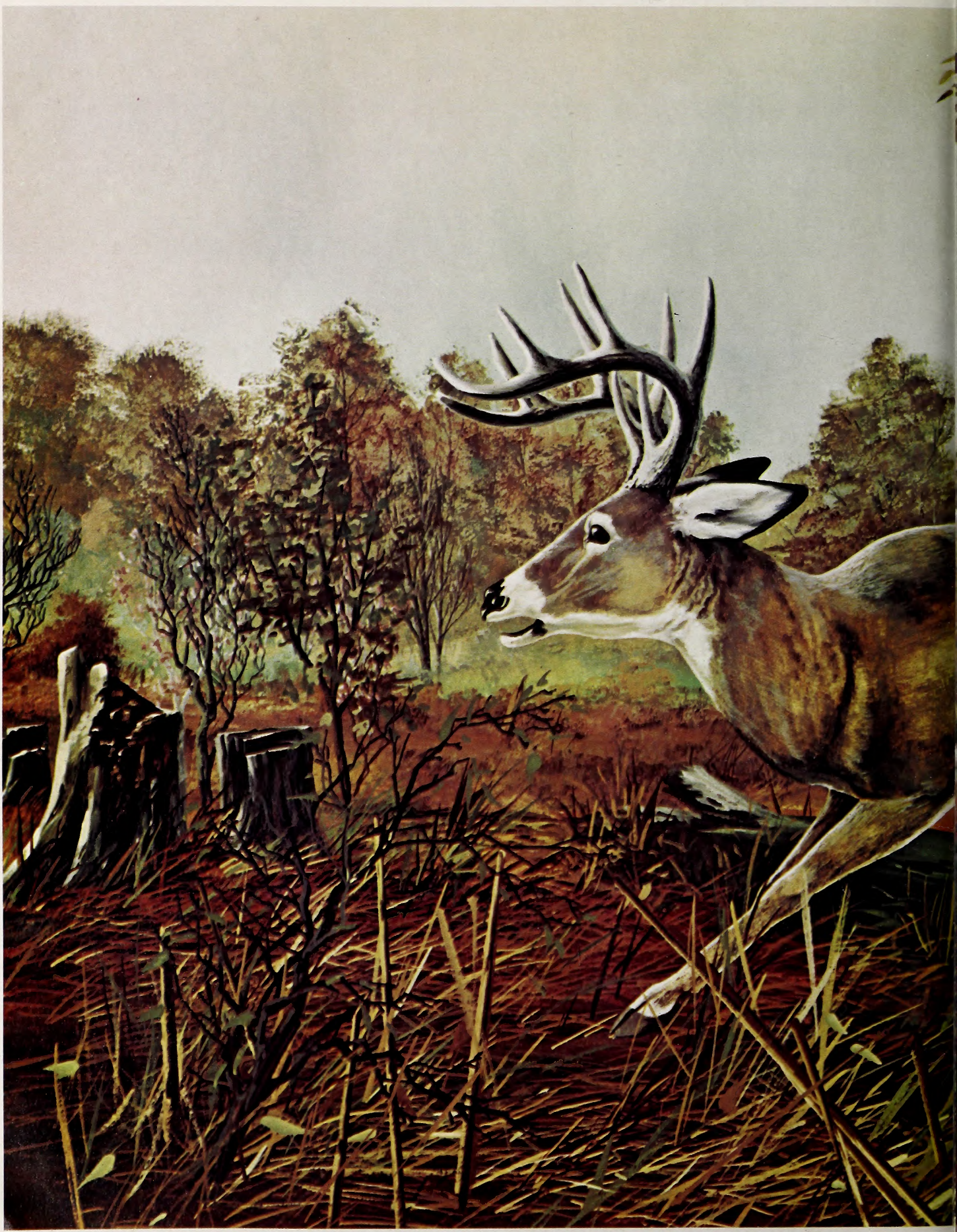
November 20-21, and 22 are the dates for this year's N. C. Wildlife Art Exhibition. For details, see the bottom of page 27. For an example of what you'll see, look on pages 14 and 15.

More Hunting

Most hunting seasons not already open, get cranked up in November. Check your copy of the Hunting and Trapping Regulations for 1975-76 for specific dates, bag limits, open areas, licenses and other important information.

Brittany Spaniels Arise!

No telling how many readers (and their dogs) caught the mislabling (page 13, October, Wildlife) of Joan Cone's Brittany, Bobby. The cutline writer sends apologies to all Brittany owners, their lovely spaniels, to Joan Cone and even to the setters, who were innocent bystanders.



Whitetail Buck

Bob Binks

After You Bag Your Deer...

by Ed Pearce
Orlando, Fla.

I was on my way to a well-located stand for a late afternoon deer hunt in Florida's Ocala National Forest when I heard a shot. In a few minutes, I'd located the hunter and the downed buck.

As I arrived, the successful hunter, about 35, turned to me and said," All I want is the antlers, do you want the buck?"

I was probably the most surprised hunter who ever hunted, and replied, "Why?"

He came back with, "I don't have the equipment, and never learned how to take care of the meat, cut off the antlers or get the deer to my auto. That's my first deer."

It was true; he didn't even have a knife.

Because I couldn't see that good meat wasted, I accepted and immediately field dressed the buck, putting the heart, liver and kidneys in a plastic bag I carried. As I finished, my hunting partner arrived and helped me cut and trim a 12-foot limb from a nearby tree. We swung the deer from it with a 20-foot nylon rope I carry wrapped around my waist and walked him out to my auto.

The hunter watched everything we did and remarked, "So that's the way it's done."

We exchanged names, addresses and telephone numbers, and that was that.

An isolated case? Maybe. Among each year's hunters there are many young newcomers and perhaps there's some excuse for them. But lately I've also noticed many not-so-young ones who are ill-equipped to care for any animal bagged during the hunt. From outward appearances, they've a gun and little else.

No member was accepted into the inner circle of my first hunting club until he demonstrated that he knew what to do with a deer after it was downed. One older member explained it this way, "Just about every man can earn money, regardless of what his work is, but it's the man who knows how to handle it after he makes it who rises to the top. Similarly, it doesn't matter how skilled the hunter is in getting his deer; if he doesn't make use of ALL of it, he's not only missing many benefits of the hunt, but also wasting valuable and useful items."

In England, Europe and Africa the hunter is usually accompanied by a government employee or the landowner. In our western states, Canada and Alaska, the one-price pack-in hunting trips include guides. These "other-than-hunter" people perform the field preparations on all game bagged to preserve the meat and the trophies—the hunter just hunts.

But the average American hunter is almost always on his own; he plans his hunt, carries it out as he sees fit and reaps either the benefits or suffers the setbacks that the hunt brings.

The majority of these independent hunters get by passably well until they get game. Then they run into trouble, because they don't know how to properly field dress a deer or how to care for the meat until it's safely frozen for future use. Still others don't know how to salvage the remaining desirable and useful parts of the deer. Many aren't properly equipped to do either.

Throughout many years of deer hunting, I've seen some disastrous results from this lack of know-how and equipment: spoiled meat, poor or no trophies, and a general disillusionment and disappointment to many in the sport of hunting.

All hunters have neither the time, the ability nor the inclination to become specialists such as the guides mentioned above. However, if they want to enjoy the meat from their deer and to preserve some trophies, each hunter must make arrangements with and depend upon other people for many things and, in addition, himself learn to perform certain basic functions in the field.

To be performed by the hunter in the field are field dressing the deer, keeping the meat cool by hanging it so that air can circulate around it and transporting it to a cooling facility.

Before leaving for a deer hunt, the hunter should make arrangements for the use of a cooling facility, for the subsequent butchering, packaging, labeling, freezing and long-time storage of the meat. If he waits until after he gets a deer, he runs the risk of having the meat spoiled.

Prior Preparations To Be Made Use Of A Cooling Facility

The purpose of a cooler is to keep the meat at 32 to 36 degrees to prevent its spoilage and to age it. Aging tenderizes the meat and should continue until mold appears, from one to three weeks, or until the meat is butchered.

Make the arrangements with a butcher shop, a taxidermist or a commercial meat processing facility to let you hang your deer as soon as you can get it there. Entrance to the cooler must be available regardless of the time of your return. Such an arrangement often means paying a special fee but it's worth every cent it costs.

Make sure that the cooler temperature will be maintained at 36 degrees or lower and that your fee paid includes insurance in case of spoilage or loss. Have an understanding as to the deer's condition when you bring it in. Some require that you thoroughly clean the skin and leave it on the deer; others will hang it only if it's been skinned, quartered and cased in light mesh or muslin bags. If the latter, then you must either make additional arrangements for the skinning and quartering or do it yourself.

Butchering The Deer

If you decide to butcher your own deer and need guidance, obtain a copy of the beautifully illustrated article titled "Easy Way To Butcher Your Deer" by Robert S. Davidson which appeared in the OUTDOOR LIFE November 1973 issue. You can also get good advice from your local butcher.

However, if you have a professional butcher do the job, you must first locate him and then make the necessary arrangements. In doing so, you may encounter an obstacle you hadn't foreseen. If he works for a commercial meat packing and processing facility where operations are governed by Federal and State Inspection Laws (where wild meat must be stored and handled separately at all times), you may find he'll either refuse to hang or handle your deer or that the cost will be prohibitive.

When you do locate one, instruct him to first wash off the mold with a vinegar solution, and, while butchering, to remove as much as possible the fat, tallow, gristle and membrane throughout the deer. These are the principal causes of objectionable odors. Also have him bone every cut.

Packaging The Deer

The butcher should package the meat very tightly in double freezer wrapping paper and secure each package with masking tape. Instruct him to package steaks, chops and pounds of stew meat according to the number of people in your family; roasts individually.

Labeling Packages

Have him clearly label each package with your name, date and description of each item; such as six chops, four steaks, rump roast, backstrap, ham, etc. Furnish him with typed labels before he begins the butchering; and come to an agreement with him that he'll keep your deer separately from any other deer he's processing. Some have a penchant during rush periods for mixing meat from all deer being butchered.

Freezing and Storing The Deer

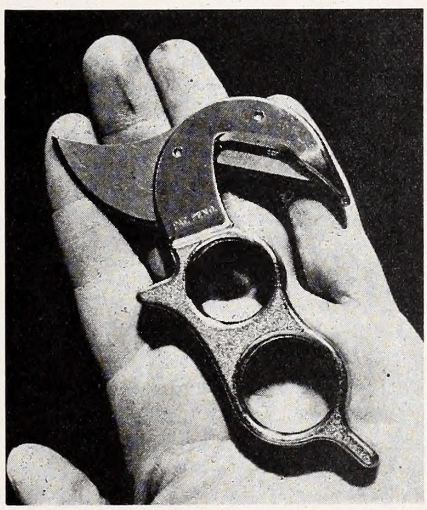
The deer should be quickly frozen and thereafter kept at a steady zero or lower degrees. Fluctuating temperatures can easily ruin good venison. For that reason, you may wish to keep it in your own freezer. If you place it in a public locker or commercial plant, be sure you have a written agreement that they will guarantee constant zero or lower temperatures and indemnify you against spoilage and loss.

Make an itemized list when you deposit the packages in a public locker and keep records on those you remove. One of our club members had an unfortunate experience several years ago when a public storage plant malfunctioned and his entire deer was spoiled. A friend came up short five packages and was unable to collect anything because he failed to either list the packages deposited or withdrawn and got no signatures from the freezer attendant.

Field Dressing The Deer

The average American deer hunter usually is satisfied to care for the meat of the deer while on the hunt. To do this, he must be prepared to field dress the deer. For this, he will need a sharp knife, up to 30 feet of ¼ inch nylon rope, a polyethylene bag for the liver, heart and kidneys, and a pair of plastic throw-away gloves.

Many hunters are initially handicapped by the lack of a suitable knife which, when a deer is killed, quickly becomes the most important piece of equipment of the hunter. This is not the place to try to save money, get a knife with a six-inch blade, preferably one of the real good ones such as the Bone, Lile or Gerber brand. Or try the remarkably different "Wyoming" knife which is presently finding favor among hunters. It's a hook-type skinning blade that is guided along under the hide and is also used to open the body cavity. (below) Turn it over and you have another blade for



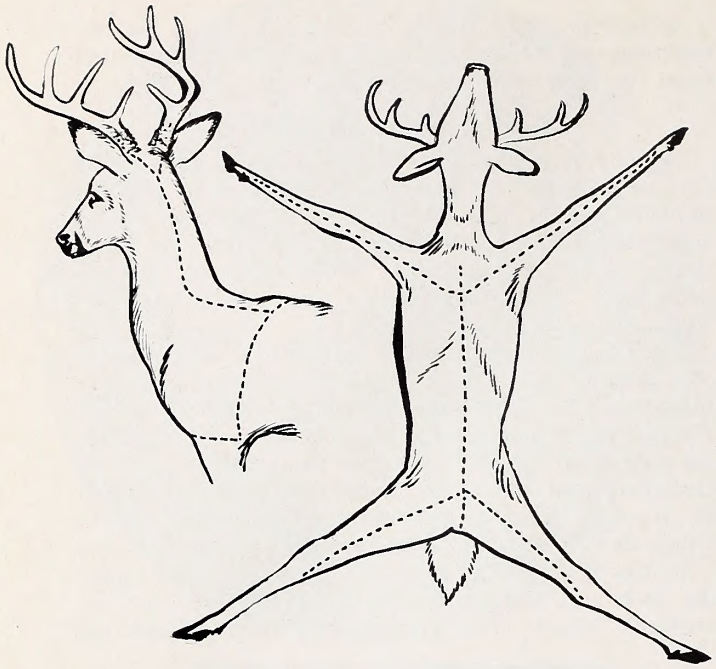
An unusual type of knife is the Wyoming knife. It gets the job done.

just skinning, caping and scalloping. The blades are of surgical steel and replaceable; it's obtainable from Wyoming Knife Corp. 115 Valley Drive, Casper, Wyoming 82601 at less than $15.00.

Good advice to all hunters is that they get completely involved by learning to properly field dress a deer. Many of today's hunters can't do this. The source of this knowledge can be your butcher or an experienced hunter who has himself performed this task. Good illustrated instructions are sometimes available in hunting publications. Also the national sports magazines periodically carry illustrated articles which can be clipped and carried in your hunting coat pocket. Nothing other than your own experience in doing so can teach you as quickly, so try it at your first opportunity.

If the head is to be retained as a trophy, end the field dressing cut at just below the front legs and don't cut beyond the brisket; otherwise extend the cut all the way to the throat which allows better bleeding and exposure to air. And don't forget to first remove the musk glands inside each leg; contact with them can easily contaminate the meat.

As an important part, and many times overlooked



Diagrams and descriptions help, but actual experience will be the best teacher when it comes to skinning your deer. Note the special cuts if you plan to have the deer head mounted (left). Carry the best knife you can get, a couple of heavy-duty plastic bags and 20 feet of rope.

part, of field dressing, pay particular attention to the bleeding of a freshly-killed deer. It's best accomplished by severing the jugular vein or puncturing the heart. If the head is to be preserved, the heart should be punctured through the front side of the chest and the deer hung head down to facilitate bleeding. Otherwise, the jugular vein on the neck can be severed.

When the field dressing has been done, also puncture the diaphragm to permit blood drainage of the chest cavity, and sever the larger veins on the inside of each hind leg (located about five inches from the crotch) to drain blood from the hams.

Cooling

After field dressing, prop the deer carcass open with one or two sticks and hang it 10 feet or higher from the ground so that air can circulate around it. I've seen meat spoiled even in freezing weather because the unskinned carcass lay too long on one side in the snow. Keep it as cool as possible by allowing air to freely circulate around and through it until you can get it to a cooler.

Trophy Heads

If you have made prior arrangements for hanging the deer unskinned or for someone else to skin it, fine. Deer skins are sometimes so badly scarred by ticks that they're not worth tanning, so examine your deer carefully before deciding to save the skin.

First, field dress your deer. Then, if you decide to retain the head for a trophy, proceed as follows. Make the first incision completely around the deer behind the shoulders (above). This is done by laying him on his side, and cutting from back to brisket in line with the back of the front leg. Now roll the deer on its back and cut around the front legs and across the brisket. Then roll him on the other side and complete the incision to the starting point on the back. The complete cape and scalp will be nearly one-third of the entire deer skin.

Lay the deer on its belly. Starting where the body incision crosses the top of the shoulders, cut up along the center of the back of the neck to the top of the skull, stopping about two inches behind the back of the antlers.

Now skin the neck and shoulders by pulling the skin down and forward from the shoulder and neck incision. With the scalp attached to the head, cut the head away from the neck at the base of the skull. Freeze the head and scalp until it's transported to the taxidermist.

Skinning The Deer

If your prior arrangements with the cooler require that you skin the deer, proceed as follows: Lay it on its back (left) and, starting at the belly incision, make the leg-cuts on the inside of each leg and then pass around to the back side below the heel (cut entirely to the hoof). It's best to skin the rear end of the body first; then, if necessary, hang the deer up by the back legs to complete the skinning. Skin out the hind legs first and the forelegs last.

After completely removing the hide, stretch it out and rub four to six lbs. of table salt on the flesh side. Then fold the sides to the middle, roll it up, hair side out, and place it in a plastic bag or box for shipment or transport to the tanner. Keep it in a cool place at all times. If the skin exudes moisture, draw it off, scrape off the wet salt, dry it as best you can and resalt the skin. Before shipping the skin, cover it on the flesh side with borax.

Quartering The Deer

After the deer has been field dressed, the head removed, the carcass skinned and cooled, remove the legs at the knee joints and cut the carcass in half by sawing or chopping down the center of the backbone from end to end. Then cut each side into two pieces. Trim away parts damaged by gunshots and place each of the four quarters in a clean muslin bag, hang and continue to keep cool until placed in a cooler.

Transporting Your Deer

Always keep your deer in the shade at your camp to help keep it cool. A car-top carrier is the ideal way to get your deer home or to the cooler. If you put it in the trunk of your car, leave the top open and don't park in the sun or in a heated garage. Never tie the deer to the car hood; engine heat will cause deterioration of the meat.

If you are transporting only a portion of a deer (most hunters do share with their buddies), you might be called upon by a law enforcement officer to furnish the name and address of the lucky hunter who bagged it—be sure you know it.

The quality of the game meat depends on how the animal is handled from the time of the kill until served on the table. While venison does have a distinctive flavor, much of the poor quality and off-flavor can be traced to poor handling in the field.

The purpose behind the meticulous care of the meat is to provide a product properly aged, safe to eat and comparable in every way to commercially-processed meat. With such a product, the hunter has a treat in store for himself and family; there remains only the proper cooking. ▲▼

Stem to Stern

BY ED JENKINS

A sudden drop of a wheel off the road may launch the boat in the middle of the highway if the craft is not property secured. Check the trailer coupling, tie downs, and winch before each trip.

• The boat trailer has opened millions of acres of water to the boating public and enabled the landlocked sailor to travel to good boating waters with his boat in tow behind the family automobile.

The trailer is one of the most important items a boat owner has. It must not only carry the boat at safe highway speeds and withstand bouncing over rough roads, but also it must provide good support for the boat out of the water to prevent warped hulls. If the choice of boat trailers is a poor one, it can limit the use of the boat, cause boat damage, can become a traffic hazard, and could cause serious injury.

The trailer should be carefully matched to the boat. When choosing a trailer, one should consider the total weight of items carried in the boat as well as the weight of the boat and motor. Gasoline weighs 6.6 pounds per gallon. A six-gallon tank when full weighs approximately 43 pounds, and an 18 gallon built-in tank may weigh upwards of 150 pounds when full. Check the total weight of boat, motor and equipment against the manufacturer's trailer load capacity.

Trailer tires come in all sizes. High speed midget tires offer the advantage of keeping the boat low to the ground which makes loading and unloading easier and lessens the effect of the wind on the boat when it is towed. However, these tires operate at high r.p.m.'s, and one must make sure that wheel bearings are properly lubricated to avoid heat buildup.

Standard size automobile tires the same size as the tires and wheels on the towing vehicle eliminate the need for a spare. Large tires will not bounce into and out of small holes; and because of increased surface areas, there is less chance of getting stuck or bogged down in sand or soft ground. The disadvantage of the standard size tire is that the boat must be carried between or above the tires, thus causing the boat to be higher, increasing the effect of the wind when towing and making loading somewhat harder.

Small size tires range in size between the midget and standard tire. While these tires keep the boat lower to the ground, they do not bounce into and out of holes as bad as the midget size. They do bog down easier in sand and soft ground than the larger tires.

The boat and trailer should be matched to the towing vehicle. With today's interest in small autos, it's easy to exceed the car's recommended towing weight. Check the vehicle operational manual for maximum towing weight.

Consider too, the special towing equipment packages offered as an accessory on most automobiles. These usually include such options as heavy-duty battery; alternator and cooling system; "workhorse" gear ratios; anti-sway and anti-skid devices; and stiffer shock absorbers.

Make sure the trailer hitch is strong enough to do the job, and then some. Frame-mounted hitches are your best bet. They are much superior to the bumper hitch because swaying and fishtailing (common occurrences with a bumper hitch) are reduced at high speeds.

There should be sufficient tongue weight to prevent an upward jolt from lifting the trailer coupling off the ball of the hitch. The correct amount of tongue weight will keep the coupling on the hitch ball, but will not cause the rear end of the towing vehicle to sag. Check the coupling frequently. Screw types can work loose. The wedge-action is simpler and more fool proof.

While a safety chain is not required by law in North Carolina, one is certainly needed as an added safety measure. The chain should be hooked to the frame of the towing vehicle with enough slack to allow for maximum turns. Too much slack and the chains will drag; too little and sharp turns will be hampered.

North Carolina Trailer Laws

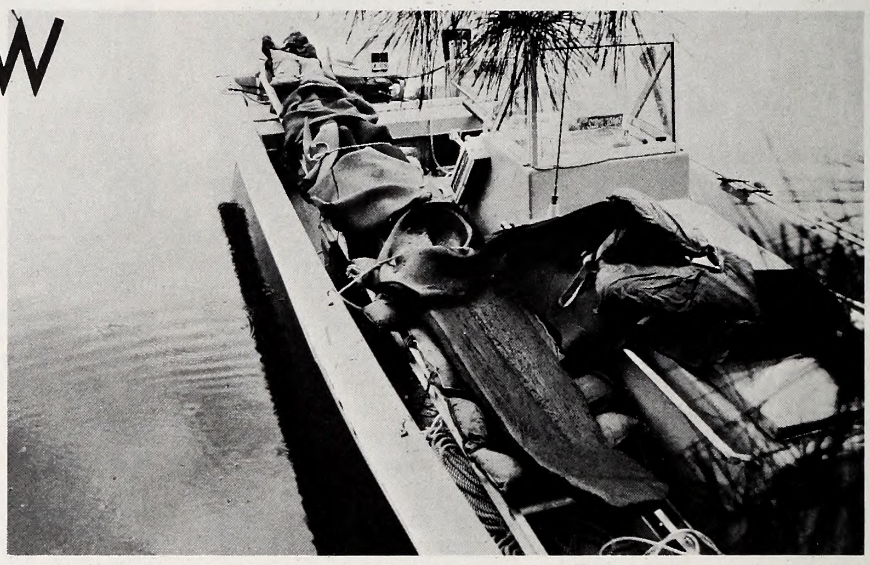
A boat trailer requires licensing and titling. The license fee is now $6.00 annually and expires the same date as for automobiles, February 15. The titling fee of $2.00 is required only when the trailer is sold or transferred.

Tail, stop and directional lights are recommended on any size trailer. However, state law requires lights only if the lights of the towing vehicle are obscured by the boat trailer or if the gross weight of the trailer exceeds 4000 pounds. Most trailer lights meet the standards required of reflectors on trailers; however, if a trailer does not have trailer lights, it must have on the rear two, four-inch reflectors, one on each side.

Trailers in North Carolina are not required to have brakes unless the gross weight is over two tons. Many

• **continued on page 27**

A PROFILE OF LAKE WACCAMAW



Students in UNC at Wilmington Field School of Marine Archaeology wait for better weather (top) before using electronic gear to chart bottom of Waccamaw. Lacy Nichols, fishery biologist, (left) and Frank Chapman, diving safety officers, check electronically produced profile. This is the canoe (above) excavated from the bottom of Lake Waccamaw.

● The lakefront property of Mr. and Mrs. Rome Lytton, Jr., of Lake Waccamaw was abuzz last summer with activity as students and instructional staff in the University of North Carolina at Wilmington's Field School in Marine Archaeology hauled their diving gear across the roadway to the boat landing. On routine patrol of the area, Wildlife Patrolman Troy Sigmon stopped to see what all the activity was about.

He learned from Gordon Watts, director of the field school, that the program's Diving Safety Officer Frank Chapman had determined that the seas were too rough in the Atlantic for the divers to safely enter the water off Masonboro Beach and that Rome Lytton III, an avid collector of artifacts from Lake Waccamaw, had suggested that the lake would be an excellent place for the students to get some underwater archaeological experience until the seas settled in the Atlantic.

Watts explained that the McKee Craft, one of the university's vessels being used in the program, was equipped with an electronic profile recorder which would be used to determine the contours of the lake's bottom to give instructors an idea of possible inundated habitation sites where settlements might have been before the lake expanded to its present size.

Upon learning of the special equipment available on the McKee Craft, Sigmon suggested that the Wildlife Resources Commission might also benefit from the profile study.

A number of tires were sunk to form an artificial fish shelter near a boat launching facility on the lake's shore. During the course of time, the markers over the "reef" disappeared and the exact location of the fish shelter became unknown. Sigmon suggested that the electronic profile recorder be used to locate the structure so that it could be plotted on maps of the lake.

He called in Lacy Nichols, fishery biologist with the N. C. Wildlife Resources Commission, to assist in the search for the missing reef. Nichols and his summer assistant, Allan Lomax, led boat pilot Frank Chapman to the general area where the tires were sunk and the recorder was used to record a profile of the bottom.

Nichols said that while the profile recorder registered the detection of some anomalies in the general area where the tires were sunk, divers were unable to make any positive identification of the tire shelter because of the poor visibility underwater. Nichols explained that the color change on the recorder's printout indicated that the lake's bottom in that area may be composed of pulpy peat, in which case the tires might have sunk below the bottom's surface.

Meanwhile, students in the program were diving about one-half mile offshore from the Lytton property. As luck would have it, during the first day of diving the first student overboard happened upon an important find—a dugout canoe believed to be from an early Indian culture. The next day was spent gridding the exact site through the use of transit instruments so that once the canoe was raised the surrounding area could be combed for other artifacts.

On Friday afternoon, the divers excavated the thirteen and one-half-foot canoe which appeared to have been burned out or hollowed out from a cypress or juniper log. As soon as it was floated ashore, the students doffed their wet suits and carefully wrapped them around the canoe to perserve as much moisture as possible in the wood during transport to the Fort Fisher Preservation Laboratory.

Under the guidance of Leslie Bright, preservation expert for the North Carolina Department of Cultural Resources, Division of Archives and History, the canoe was submerged in a vat of fresh water pending a study of the most suitable preservation method.

Gordon Watts said two small sam-

● **continued on page 27**

Jacks... or Better?

FISHING

by Jim Dean

• I launched the boat into the dark water and clamped the electric motor onto the stern. Then I walked back up the hill to the car and got my fishing tackle. Except for the gentle slapping of wavelets against the side of the boat and the distant call of a bobwhite, all was quiet on the lake.

This lake is fairly typical of the many old mill ponds and city reservoirs scattered across North Carolina's mid-section. During the spring and summer months, it is fished regularly, but beginning shortly after Labor Day, the fishermen leave. Some go dove hunting. Others train dogs or shoot skeet. By the time mid-October and November roll around, the lake is virtually forgotten. Sometimes weeks go by without anyone fishing it—which suits me fine.

I paused on the bank to admire trees on the far bank. They were scarlet, yellow and rust. So strongly were they reflected by the water that it was difficult to tell exactly where the water stopped and the trees began. The sky was brilliant blue, relieved only by an occasionally puffy, white galleon that sailed past on a steady sea. I could smell the faint aroma of curing tobacco.

As I rigged up my tackle, the electric motor carried me up the lake. Occasionally, I had to readjust the steering as the boat yawed to one side or the other. My wake looked as though it had been cut with pinking shears, but I was in no hurry.

When I reached my favorite cove, I eased towards the bank and began to cast a diving plug around the old stumps and roots.

I had been fishing perhaps 15 minutes when I saw the long, pale greenish shape roll up behind the plug. There was no strike, nor was the surface of the water broken. Had I not been looking directly at the plug, I would never have seen it.

I cast to the same spot again. This time, I reeled the plug in rapidly, giving it erratic jerks. Halfway back to the boat, I had a sudden hit and a big chain pickerel slashed the surface, flinging droplets of water everywhere. Moments later, I dipped the net under the fish and hauled it aboard. It was a 20-inch jack. Some bass fishermen don't like pickerel, but in my opinion, a pickerel is far more handsome than a largemouth. Also, a jack in the two-to-three-pound class can put up a heckuva scrap.

Though I fish this lake more or less regularly, I rarely ever catch pickerel except in the fall and winter. Sometimes along about the first good cold snap, the pickerel begin to move back into shallow water along the banks, especially where there are weed beds, stumps or other obstructions. Bass are also often found in such water in the fall, and it is not uncommon to catch both using the same techniques.

Basically, I use a casting rod and reel and a lure that imitates a minnow. I like those that float at rest, and dive when you retrieve them. I cast near the shoreline around stumps and weedbeds, then retrieve rapidly. Both bass and jacks like these lures, and they seem to like them best when they're moving smartly. I also like to use a flyrod and popping bugs or streamers in the fall.

I don't always catch fish, of course, but it's rare to get skunked. To be perfectly truthful, I really don't care if I only catch a couple. It's almost enough to have the lake in all its autumn glory to yourself. ▲▼

AN ENDANGERED SPECIES
Saving the Red-Cockaded Woodpecker

by Stuart Critcher

In order to save an endangered species, you've first got to find it. That, in part, describes the plight of one of North Carolina's least known members of the woodpecker family—the red-cockaded woodpecker.

The fact is that not a whole lot is known about their present range and numbers and this article hopefully will serve two purposes, 1) to stimulate greater interest in these endangered birds so that the likelihood of saving them from possible extinction is improved, and 2) to generate more information on the present range or status of the red-cockaded woodpecker.

The red-cockaded woodpecker was first listed as rare and endangered by the U. S. Fish and Wildlife Service in 1968 (U.S.D.I., 1968) and was officially recognized as an endangered species in 1970 when it was listed in the Federal Register, Volume 35 (199): 16047, dated October 13. More recently, it is included in "United States List of Endangered Fauna," published by the U. S. Fish and Wildlife Service in May 1974. These notifications are in compliance with Congressional enactment of two significant pieces of legislation: the Endangered Species Conservation Act of 1960 (Public Law 91-135) and the Endangered Species Act of 1973 (Public Law 93-205), which became effective December 28, 1973, supplanting the previous act.

The red-cockaded woodpecker's occurrence is limited to the southeastern states, from east Texas to the Cumberland Plateau of Kentucky, eastward to southern Virginia and the eastern shore of Maryland, south to Florida. In North Carolina, the red-cockaded is believed to have its highest densities in the long-leaf pine stands of the Sandhills, with fewer numbers generally occurring at scattered locations throughout the Coastal Plain and in a few counties of the Piedmont. The accompanying map, Figure 1, shows those counties which contain recently observed colonies, or counties where the bird has been reported or observed since 1960 (Jackson, 1971).

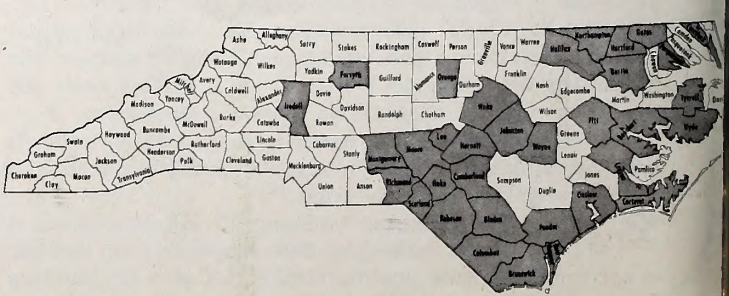
The records of occurrence for North Carolina are the best available at this time; however, it is acknowledged that they are incomplete and possibly inaccurate. The reader is urged to submit any sightings or nesting records, and to contribute additions or to suggest deletions from the distribution map. Exact locations and dates of observation are requested. Please address to the author, c/o Wildlife Resources Commission, Raleigh, North Carolina 27611.

To facilitate identification, the red-cockaded can be described as medium sized, about 7½ inches in height, with strong black and white banding across the back, wings and outer tail feathers, and with distinctive white check patches. Seldom are the two slight red cockades on either side of the head of the male visible.

The bird is nonmigratory and lives its entire life in close association with other members of the clan, usually a group of from two to ten individuals, which occupy cavities pecked into *live* pine trees. Cavity trees are located in relatively close proximity to one another, usually not more than 660 feet apart (Hopkins and Lynn, 1971). This group of occupied trees comprises what is commonly referred to as a colony. The clan is believed to be commonly comprised of a mated pair, their offspring and other adults which serve as helpers in feeding the young and defending the colony. Usually three or four eggs are laid and only one brood is raised each year. Most nesting activity occurs from early April through June.

The exact number of red-cockaded woodpeckers is not known at the present time, however, speculative estimates have been made by some workers. Jackson (1971) estimated the entire southeastern population to be less than 10,000 individuals. Carter (1974) states that the population in the Sandhills region of North Carolina exceeds 1,000 birds. The Sandhills undoubtedly supports a greater density of red-cockadeds than any other portion of the state. Recognizing this, it is reasonable to assume that the total population in North Carolina does not exceed 2,000 birds.

Figure 1, Distribution of the red-cockaded woodpecker in North Carolina.



This is a typical nest tree of the red-cockaded woodpecker. The drying resins create a whitish glaze over the area near the cavities. Tall, mature longleaf or loblolly pines (left, below) represent typical habitat of the red-cockaded.

The endangered status of the red-cockaded can be attributed to two major factors: the harvest of mature pine trees, with current emphasis on short-rotation; and the very specialized and restricted habitat requirements of the bird; primarily the requirement for mature, living pines for construction of nesting and roosting cavities. There is preference for longleaf and loblolly pines; however, shortleaf, pond and slash pines are also utilized. Often the individual tree selected for cavity construction is infected with red heart disease; also the cavity tree is often characterized by a flat-topped appearance, usually the result of ice damage to the crown.

Cavity construction requires several months to three years of work by the woodpeckers; probably a minimum of ten months is needed before occupancy for nesting. Active utilization of the cavity can be readily detected by a whitish glaze of drying resin extending below the cavity for several feet. This flow of resin is created by the red-cockaded's intentional and constant drilling of small pockets in the sap wood. This glazed appearance of the trunk can be seen and recognized from several hundred feet away and can be effectively used in locating colonies or in detecting the presence of the species.

The function of this sap flow in the woodpecker's scheme of life is not clearly understood; however several explanations have been offered, all of which can be logically understood. One suggested purpose is a deterrent against predators, such as ants, snakes,

and flying squirrels. The whitish, candle-like trunk is much more visible, which may serve the red-cockaded to advantage in simply locating the cavity on routine returns, or on other occasions of dire urgency from winged predators such as the sharp-shinned hawk. Another speculative explanation is that the creation of resin flow is an instinctive function of the creature's behavioral pattern associated with establishment of territorial domain.

Feeding habits of the red-cockaded have been documented quite thoroughly (Beal, 1911, 1916, Baker, 1971). Stomach analyses of 99 specimens revealed that foods consumed were comprised primarily of insects (86 percent) and various vegetative materials (14 percent). Beetle larvae constituted 16 percent of the diet. Other arthropods eaten include ants, spiders, centipedes, millipedes, moths, corn earworms and caterpillars. Seeds and fruits of a variety of plants are taken, including wax myrtle, magnolia, poison ivy, wild grape, pokeberry, blueberry, blackberry, wild cherry, pines, greenbrier, blackgum, dogwood and American holly.

Carter (1974) in his study of the red-cockaded in the Sandhills region of North Carolina measured the height of 499 cavity trees; they ranged from 24 to 100 feet, averaging 61.3 feet. The average diameter at breast height was 17.2 inches; the range of DBH from 7.4 to 27.3 inches. Height of 815 cavities ranged from 4.6 to 71.2 feet above ground level, averaging 24.3 feet. Most of these trees (86.9 percent) were longleaf pine; and 69.4 percent had flattened crowns. Studies in Texas, Georgia, Florida and South Carolina have shown that these birds typically choose trees 10 to 25 inches DBH and from 70 to 100 years in age. The basal area[1/] of the timber stands within colony areas studied in South Carolina ranged from 10 to 150 square feet per acre; the average was 61 square feet (Hopkins and Lynn, 1971.)

1/ Cross sectional area at a height of 4½ feet, expressed as square feet per acre.

Hopkins and Lynn reported that 89.3 percent of the cavity trees on their study areas in South Carolina were characterized by open or light understory vegetation. Most authors agree that the red-cockaded shows a decided preference for open understories and that cavities are usually abandoned when understory vegetation interferes with either access to and/or visibility of the cavity. This preference for openness is further substantiated by the presence of significant numbers of cavities immediately adjacent to roads, utility rights-of-way, and other natural or man-made openings in the forest.

An understanding of the home range and territorial requirements of the red-cockaded woodpecker is essential to the development of sound management principles that will assure the preservation of the species. Lay and Russell (1970) in their Texas study indicate a minimum of 25 acres per colony. Crosby (1971) in Florida found that a nesting pair utilized an area which averaged 42.4 acres. Baker's (1971) study in Florida showed that a colony of eight birds utilized a maximum area of 162 acres, and that the maximum distance that these birds were observed away from the cavity trees was 2,640 feet. While considerably more study on the territorial requirements of the bird is needed, the data which are now available must serve as the basis for management guidelines.

Foremost in management of the species is the preservation of colonies where they now occur, and manipulation of the habitat to insure perpetuation of the essential requirements of suitable nesting sites and adequate food supplies. Management of the colony site must include preservation of all cavity trees and an additional number of mature or old growth pines which can serve as replacement cavity trees. No timber harvest within the colony area is suggested, unless thinning is required to achieve a more open stand, which optimally should approximate a basal area of 60 square feet per acre.

Understory vegetation within the colony site should be kept below five feet in height. A prescribed burning program at three-year intervals is indicated. The colony site should be designated by establishment of a perimeter boundary extending 200 feet beyond the outer cavity trees. In addition to the colony site, an adjacent support stand of pines should be maintained to assure adequate feeding areas. The support stand should be at least 40 acres in size and managed on an 80-year harvest rotation in longleaf and 70-year in loblolly. No logging, construction or other activity which would disrupt nesting activity should be allowed between early April and late June.

The U. S. Forest Service has published guidelines for the management of the red-cockaded woodpecker on all national forest lands. Management practices are currently underway on the Croatan and Uwharrie National Forests, where this species is known to occur. Similarly, an active preservation and management program is in effect on the Fort Bragg Military Reservation, including the Camp Mackall section in Richmond and Scotland counties.

To insure the preservation of the red-cockaded woodpecker population on approximately 185,000 acres of state lands which are administered by the North Carolina Wildlife Resources Commission, timber management and harvest guidelines have been prepared. These guidelines are very similar to those which are being followed by the U. S. Forest Service on our National Forests and by military land managers on Fort Bragg. These guidelines, in abbreviated form, are as follows:

1. Locate and mark all trees containing colonies and "starts," and all relict trees. Plot all such trees on detailed maps. Markings shall consist of two 6" bands of white paint.

2. Establish a red-cockaded woodpecker management unit boundary around each colony or group of cavity trees. Mark this boundary with a single 6" band of white paint. This boundary line shall be no closer than three chains (about 200 feet) to the outer cavity trees in the colony.

3. A minimum of ten (10) acres shall be included in management areas which contain one or two cavity trees.

4. Allocate 20 to 30 acres to compact colonies and/or colonies on sites with basal areas of 50 to 75 square feet.

5. Allocate 30 to 50 or more acres to colonies containing basal areas less than 50 square feet.

6. Exclude all timber cutting in red-cockaded woodpecker management units, except to keep the basal area between 50 and 60 square feet.

7. Save all old growth or flat-topped pines having a diameter in excess of 8".

• **continued on page 27**

WOODCOCK SURVEY

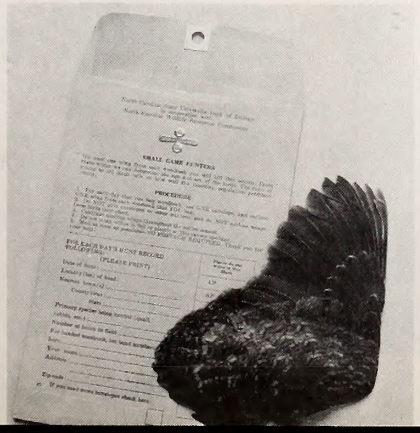
by Tim Stamps and Phillip D. Doerr
N. C. State University
Raleigh

RENOWNED by aliases such as timberdoodle, bogsucker, night partridge, snipe, whistler, and bog borer, the American woodcock **(Philohela minor)** is a zany looking upland dynamo whose flight through alder and birch has left many hunters "holding the bag." This feathered phenomenon of bottomland thickets throughout eastern North America has recently become the favored game species for a growing number of hunters, and with good reason. Bird dogs point staunchly the lairs of leaf-colored timberdoodles, and after flushing, the woodcocks' deceptive flight through heavy cover challenges the most proficient scattergunner.

Woodcock are year-round residents of North Carolina, inhabiting regenerating forests along creeks and seeps throughout the state. In the autumn, woodcock from northern states migrate southward with many birds passing through or wintering in North Carolina. For enthusiastic bird hunters, an autumn trek into lowland thickets of alder, blackberry, and greenbrier is sure to result in fast action, fond memories, and, quite possibly, torn trousers!

Biologists at North Carolina State University and the North Carolina Wildlife Resources Commission are cooperating in a study to determine the potential of the woodcock population to meet increasing recreational demands. Tar Heel hunters are helping the study by contributing wings from woodcock bagged during the hunting season.

The collection of woodcock wings from hunters throughout the woodcock range was initiated in 1959 by the U. S. Fish and Wildlife Service for the purpose of monitoring the effects of pesticides on the reproductive success of the woodcock and has continued to this date as an important tool in regulating woodcock hunting. Plumage characteristics on woodcock wings distinguish immature birds from adults, and males from females. From a large sample of wings the number of immature birds per adult female can be estimated, providing an index of the reproductive success of the population. In addition, data that hunters write on wing collection mailing envelopes concerning the date, location, and duration of the hunt provide information about the regional abundance of woodcock during the hunting season.



The names of wing collection participants have been collected from state, provincial, and Fish and Wildlife Service personnel but a shortage of woodcock hunters in the southeastern U. S. has precluded the collection of a sufficient number of participants from North Carolina. In order to boost the size of the wing sample, quail, grouse, and genuine woodcock hunters were urged to participate in the woodcock wing collection survey initiated by the authors last year **(Wildlife in North Carolina,** Nov. 1974, p. 8).

Response

Eighty-four volunteers participated in the survey, contributing wings from 289 woodcock bagged during the 1974-75 season. In addition, participants in the U. S. Fish and Wildlife Service woodcock wing collection contributed wings from 127 birds.

Results

On the average, hunters bagged 2.07 woodcock per trip and 5.90 birds during the season. Several woodcock "experts," however, bagged over 30 birds each during the season.

One hundred fifty-six immature birds were bagged per 100 adult females but this index of reproductive success is probably biased because we found that immature woodcock predominated in coastal counties while adult birds predominated in the Piedmont. As a result, the reproductive index determined from North Carolina birds appears to be related to the geographic distribution of the harvest.

The returns indicate that hunters in the Piedmont and Coastal Plains bagged woodcock consistently during the entire season but that birds were scarce in the mountains from mid-December to mid-January. This suggests that woodcock winter in North Carolina with the exception of western counties where a higher incidence of freezing occurs. Woodcock probe in damp soil and rotting vegetation for meals of earthworms, centipedes, and insect larvae; when frozen soil exists for several days, the birds move.

At the present time, we believe that transient woodcock move into North Carolina during November, reaching peak numbers in early December. Woodcock abundance from December to February is probably related to the severity of the weather. Northward movements begin in mid-January and continue through mid-March.

Please Write!

Hunter contributions have helped considerably in the quest to determine the timing of woodcock movements through North Carolina. We are collecting wings during the 1975-76 woodcock season, November 22-January 24, and will appreciate additional wing collection participants. If you hunt upland game birds and expect to bag woodcock, send your name and address to Dr. Phillip D. Doerr, NCSU, Dept. of Zoology, Box 5577, Raleigh, N. C. 27607. Please write immediately; we want to get instructions and envelopes to you by opening day, November 22.

HUNTER SAFETY TRAINING: One Key To Safer Hunting

By C. J. Overton

ALTHOUGH, relatively speaking hunting is one of the safest of all sports, there are casualties. As you might expect, most are caused by carelessness, but some of the statistics about hunting accidents may surprise you.

For example, during the 1974-75 season, a survey of hunter casualties in North Carolina indicates that deer hunters were most likely to be involved in accidents.

Out of a total of 33 accidents—in which 10 were fatal—18 occurred on deer hunts and three of these were fatal. Twenty-one of the 33 accidents involved shotguns. Eight of the accidents were self-inflicted.

The majority of the accidents occurred during the middle part of the day, and as usual, mistaken identity was the primary cause. However, hunting with the safety off and having a gun fire accidentally were two other factors in accidents. These types of accidents tend to cause more deaths since victims are hit at such close range. In 16 of the 33 accidents, the shooters were less than 10 yards from the victims.

The average age of the shooters was just over 29 years and only 10 were under 19 years of age.

Weather conditions did not seem to be a factor as most of the accidents occurred on clear, bright days.

Most of the accidents occurred during the first 14 days of the hunting seasons and in light cover—not in the dense woods as one might expect.

Hunting experience did not seem to be a factor as the average shooter had hunted twelve and one-half years.

None of the above statistics would have happened had the shooters not been careless.

This is the reason I feel that the North Carolina Hunter Safety Program sponsored by the N. C. Wildlife Resources Commission, is so important. Not one of the shooters had been a student in our program. In fact, since the program began in 1971, not a single Hunter Safety graduate has caused a hunting accident.

Accidents, and especially fatal ones, have declined over the last few years, but so much improvement can be made by each hunter by just being more careful.

The North Carolina Hunter Safety Program is training approximately 25,000 students per year in the use of firearms, but most of the students are from 12-15 years of age. Enrollment of adults in these classes is slight even though adults are causing the most accidents.

I would suggest that each person who handles a firearm obey the following Ten Commandments of Shooting Safety:

1. Treat every gun with the respect due a loaded gun.
2. Watch that muzzle.
3. Unload guns when not in use.
4. Be sure barrel is clear of any obstruction.
5. Be sure of target before you pull trigger.
6. Never point a gun at anything you do not want to shoot.
7. Never climb a tree, fence or jump a ditch with a loaded gun.
8. Never shoot a bullet at a flat hard surface or water.
9. Store guns and ammunition separately.
10. Avoid alcoholic beverages.

Such a simple act as walking along with two other hunters takes some thought and consideration. These hunters pose for a "correct" way to do it. Be aware of the position of your gun's muzzle at all times. Hunter safety training will help.

TRAILERS from page 19

boaters set higher safety standards than those required by law and recommend electric or hydraulic trailer brakes on any load over 800 pounds.

The maximum width of a trailer load, without a special permit, is eight feet. The height of the load shall not exceed 13 feet, six inches.

As mentioned earlier, safety chains are not required by law in North Carolina. Most manufacturers furnish at least one on the trailer for safety. It would be a good idea to check other state's laws before venturing out of state if your trailer is not equipped with safety chains, lights, and brakes.

Trailering Tips

Towing a properly equipped trailer is easy and safe if a few simple rules are followed.

Check the hitch, coupling, safety chain and lights before each trip. Make sure tie downs are tight.

Maintain recommended tire pressure in the vehicle and trailer.

Steer wider on corners and the trailer will clear the curb and other vehicles. Do not cross the highway center lines on curves.

If you need to pass another vehicle, remember that it takes longer to gain speed and more room to safely pass. Don't cut too soon after passing. Change lanes smoothly to avoid whipping the trailer.

Allow plenty of stopping distance between you and the vehicle before you. Approach intersections and traffic signals with caution.

Backing a boat trailer is a skill that can be mastered with a little practice. The fundamental rule for backing a trailer is to turn the steering wheel the opposite direction you want the trailer to go.

The more you practice at trailering, launching and loading your boat, the less likely you'll be embarrassed at the ramp site. A little know-how and a little courtesy go a long way towards making this chore much easier.

WACCAMAW from page 20

ples will be taken from the under side of the canoe and sent to a scientific laboratory to be dated by the carbon-14 process, a procedure which will roughly establish the time the living tree from which the canoe was made was felled.

The excavation of the canoe and the search for the artificial reef were a cooperative venture involving four state agencies—The University of North Carolina at Wilmington, the North Carolina Department of Cultural Resources, Division of Archives and History; the Wildlife Resources Commission, and North Carolina State Parks which issued a special permit to the group allowing them to remove the artifact. ⬍⬍

RED-COCKADED from page 24

8. Burn all red-cockaded woodpecker management units every three years. Prior to burning, remove all resin-covered debris and vegetation from around the base of all cavity trees.

9. Prohibit logging, burning, or other activity in red-cockaded woodpecker management units during the nesting season, April 1 through June 30.

10. Cut to ground level all understory hardwoods within 20 feet of a cavity tree, when such hardwoods are too large to be controlled by fire.

11. Timber rotation and regeneration plans should be employed which will optimize the conditions prescribed above for red-cockaded woodpecker management units.

Literature Cited

Baker, W. Wilson. 1971. Observation on the food habits of the Red-cockaded Woodpecker. Pp. 100-107 in The ecology and management of the Red-cockaded Woodpecker (R. L. Thompson, Ed.). Bureau of Sport Fisheries and Wildlife, U. S. Dept. of Interior, and Tall Timbers Research Station, Tallahassee, Florida.

Beal, F. E. L. 1911. Food of the woodpeckers of the U. S. U. S. Dept. Agr. Biol. Surv. Bull., 37: 1-64.

Beal, F. E. L., W. L. McAtee and E. R. Kalmbach. 1916. Common birds of southeastern United States in relation to agriculture. U. S. Dept. Agr., Farmers' Bull., 755: 34-35.

Carter, J. H., III. 1974. Habitat utilization and population status of the Red-cockaded Woodpecker in south-central North Carolina. M.S. thesis. North Carolina State University, Raleigh, North Carolina.

Crosby, Gilbert T. 1971. Home range characteristics of the Red-cockaded Woodpecker in north-central Florida. Pp. 60-70 in The ecology and management of the Red-cockaded Woodpecker (R. L. Thompson, Ed.). Bureau of Sport Fisheries and Wildlife, U. S. Dept. of Interior, and Tall Timbers Research Station, Tallahassee, Florida.

Hopkins, M. L. and T. E. Lynn, Jr. 1971. Some characteristics of Red-cockaded Woodpecker cavity trees and management implications in South Carolina. Pp. 140-169 in The ecology and management of the Red-cockaded Woodpecker (R. L. Thompson, Ed.). Bureau of Sport Fisheries and Wildlife, U. S. Dept. of Interior, and Tall Timbers Research Station, Tallahassee, Florida.

Jackson, J. A. 1971. The evolution, taxonomy, distribution, past populations, and current status of the Red-cockaded Woodpecker. Pp. 4-29 in The ecology and management of the Red-cockaded Woodpecker (R. L. Thompson, Ed.). Bureau of Sport Fisheries and Wildlife, U. S. Dept. of Interior, and Tall Timbers Research Station, Tallahassee, Florida.

Lay, D. W. and D. N. Russell, 1970. Notes on the Red-cockaded Woodpecker in Texas. Auk. 87: 781-786.

U. S. Dept. of Interior. 1968. Rare and endangered fish and wildlife of the United States. U. S. Bureau of Sport Fisheries and Wildlife, Resource Pub. 34.

Wildlife Art Exhibition

The buck deer that is jumping out at you from pages 14 and 15 of this issue, is an example of the fine North Carolina wildlife art that will be displayed at the Seventh Annual North Carolina Wildlife Art Exhibition again this year. The painting won the Best of Show Award for artist Bob Binks, and Bob plans to be back this year.

The exhibit is scheduled for November 20, 21 and 22 in the North Hills Shopping Center in Raleigh.

It is sponsored again this year by the Wake County Wildlife Club, and as in the past, the participating artists are asked to donate 20 percent of their sales to a memorial and scholarship fund which is designed to aid qualified students in wildlife management. Thus this exhibit offers sportsmen a chance to acquire some of the country's finest wildlife art and at the same time aid the wildlife management program in our state. This exhibit is open to the public during the hours the North Hills Mall is open for business.

Time is short for additional entries, and artists interested should contact show chairman George Sherman, 4214 Boxwood Road, Raleigh, N. C. 27612 at once. ⬍⬍

Rarin' To Go *Photo by Ted Dossett*

LIBRA4S** 1SAMPLE9999
STATE LIBRARIAN
LIBRARY BLDG
RALEIGH NC 27601

LITHO BY THE GRAPHIC PRESS, INC., RALEIGH, N. C.

Wildlife

IN NORTH CAROLINA

DECEMBER 1975

STATE OF NORTH CAROLINA

JAMES E. HOLSHOUSER, JR.
GOVERNOR

DEPARTMENT OF
NATURAL AND ECONOMIC RESOURCES
JAMES E. HARRINGTON, JR.
SECRETARY

NORTH CAROLINA
WILDLIFE RESOURCES COMMISSION

ROSCOE D. SANDLIN, CHM. – JACKSONVILLE
JAY WAGGONER, V. CHM. – – – – GRAHAM
ROY A. HUNEYCUTT, SECY. – – – – LOCUST
W. K. ANDERSON – – – – – – – NEWLAND
WILLIAM C. BOYD – – – – – WINSTON-SALEM
WALLACE E. CASE – – – – HENDERSONVILLE
HENRY E. MOORE, JR. – – – – – – CLINTON
DEWEY W. WELLS – – – – – – – – CAMDEN
V. E. WILSON, III – – – – – ROCKY MOUNT

CLYDE P. PATTON
EXECUTIVE DIRECTOR

RICHARD B. HAMILTON ROBERT B. HAZEL
ASSISTANT EXECUTIVE DIRECTORS

DIVISION CHIEFS

REX GARY SCHMIDT – – – – – – EDUCATION
CLIFFORD L. BAMPTON – – – – – – – GAME
W. DONALD BAKER – – – INLAND FISHERIES
DONALD E. CURTIS – – – – – PROTECTION
CHARLES R. FULLWOOD, JR. – MOTORBOATS
AND WATER SAFETY

The Editor gratefully receives for publication news items, articles, and photographs dealing with the North Carolina out-of-doors, but reserves the right to reject materials submitted. Full credit is given for all materials published.

WILDLIFE IN NORTH CAROLINA is published at the Wildlife Resources Commission offices, Albemarle Building, Raleigh, N. C.

Phone Number AC 919/829-7123

Second class postage paid at Raleigh, North Carolina 27611.

* * *

SUBSCRIPTION RATE — $2.00 per year (12 issues). Add $1.00 for overseas postage except APO, Canada and U. S. possessions. Back issues — $.25 per copy plus $1.00 minimum for handling and mailing; back issues may not be available. Send check or M. O. payable to WILDLIFE RESOURCES COMMISSION. Stamps cannot be accepted.. Any employee of the Wildlife Resources Commission may accept subscriptions, or send to WILDLIFE, Albemarle Building, 325 N. Salisbury Street, Raleigh, N. C. 27611.

Wildlife circulation this issue 66,700.

The Wildlife Resources Commission is an Equal Opportunity Employer and all wildlife programs are administered for the benefit of all North Carolina citizens without prejudice towards age, sex, race, religion, or national origin. Violations of this pledge may be reported to the Equal Employment Opportunities Officer, Richard B. Hamilton, Assistant Executive Director, Wildlife Resources Commission, 325 North Salisbury Street, Raleigh, North Carolina 27611, telephone 919-829-3393.

Wildlife IN NORTH CAROLINA

The official publication of the NORTH CAROLINA WILDLIFE RESOURCES COMMISSION, Raleigh 27611. A monthly magazine devoted to the protection and restoration of our wildlife resources and to the improvement of hunting and fishing in North Carolina.

VOL. XXXIX NO. 12 DECEMBER, 1975

IN THIS ISSUE

Cardinals in the Snow
Painting by Ron Jenkins ..... Page 3

Floating Sculpture
by John Crew ..... Page 4

The Hot Hole Boom
by Roy W. Miller ..... Page 6

First Colony Farms ..... Page 10

The Bobwhite Quail
by Rod Amundson ..... Page 12

The World's Most Unusual Census
by J. Merrill Lynch ..... Page 15

The $13,000 Buck
by A. H. James ..... Page 16

Saving Steels and Upper Creeks
by Jim Dean ..... Page 17

Stem to Stern
by Ed Jenkins ..... Page 18

Resource-O-Gram ..... Page 19

Ocracoke Options
by John McDaniel ..... Page 20

First of the Season
by Stephen N. Johnston, Jr. ..... Page 23

The Treestand and the Deer Hunter
by Tim Brown ..... Page 24

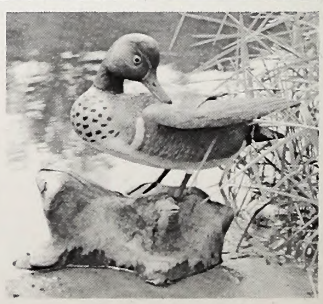
Back of the Book ..... Page 26

1975 Index ..... Page 27

EDITORIAL STAFF

DUANE RAVER – – – – – – – – – EDITOR
JIM DEAN – – – – – – – ASSISTANT EDITOR
LUTHER PARTIN – – WRITER-PHOTOGRAPHER
TED DOSSETT – – – WRITER-PHOTOGRAPHER

An objective of all levels of government should be to achieve and sustain a balance of the social, ecological, and economic benefits derived from natural resources. Without such balance none of the factors on the scale will be worth weighing.

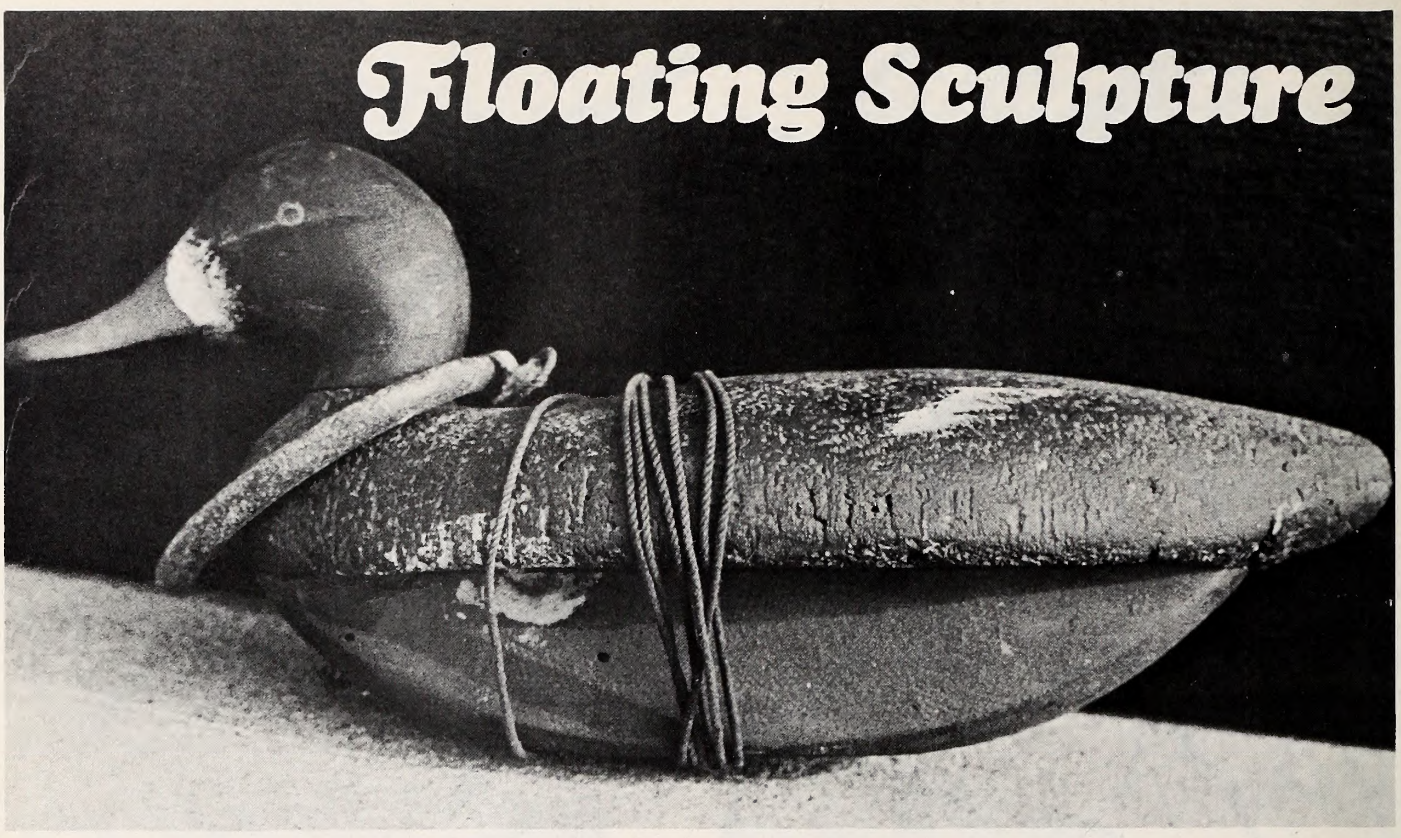


This green-winged teal carving is another of the fine works of Curtis Waterfield, Box 9613, Knotts Island, N. C. 27950. This piece is almost life sized and is the wing-stretching position. Curtis is one of the leading wild fowl carvers in our area. This particular bird was purchased by the Museum of Natural History for their collection of wood crafted art.
Photo by Rex Schmidt.

Christmas Greetings · 1975 ·

FOR PRINT INFORMATION SEE PAGE 26

Floating Sculpture



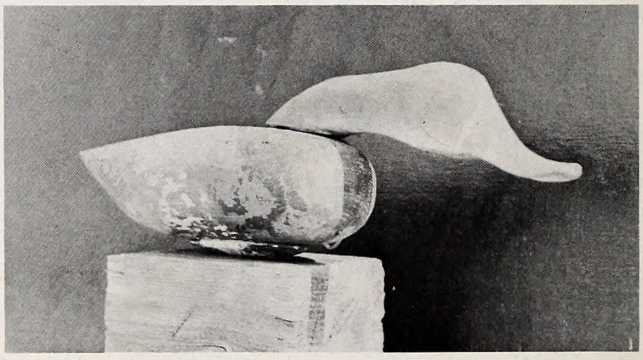
by John Crew
Photos by the Author

THE first known American duck decoys had their origin about 1,000 years ago. In 1924 archeologists from the Heye Foundation of the Museum of the American Indian discovered a basket of canvasback decoys in Lovelock Cave, Nevada. These decoys were made of bundles of bulrushes bound together and coloring was accomplished by using a combination of local earth pigments and feathers from previously slain fowl. Some of these decoys still had a loop of cord for attaching an anchor line.

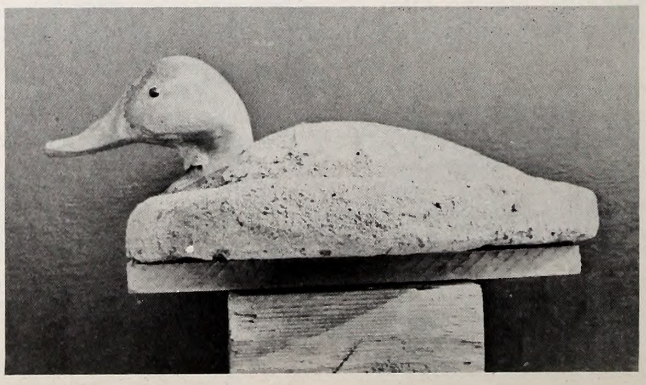
Thus American Indians of long ago originated the fore-runners of our modern decoy. In the interim between those ancient woven rushes and today's regimented, stereotyped, molded and injected plastic decoys, many different construction techniques and materials have been used. Various kinds of woods, cork, fabrics and even metals were employed to lure wild ducks within range of hunter's weapons. On the eastern seaboard between the mid 1800's and the early 1900's—the market hunting era—thousands of decoys were used by thousands of hunters.

Regional styles developed and many had unique characteristics. Many of these decoys were hand-crafted to meet the hunter's own specialized needs. These hand-crafted "counterfeits" are now considered an important part of American folk art and are eagerly sought by museums and private collectors. By the late 1800's several companies began manufacturing decoys and commercial rigs began making their appearance on the hunting grounds. These companies were small but their

The hand crafted hen scaup (above) is made of natural cork and shows a regional modification of the traditional Tarheel diving duck decoy. Original anchor is still attached. Circa 1900. The rather primitive hand made wooden scaup (below) has been fitted with an extended neck to depict a feeding bird. It is an unusual design for N. C. decoys.



This factory made natural cork canvasback decoy (below) is completely paintless due to use and exposure to weathering. Construction technique, material and style strongly reflect 1920-30 vintage, although positive identification is impossible.



production was large enough and cheap enough to compete with homemade decoys. This trend lasted for only a few years and with the prohibition of spring shooting and waterfowl sales, the manufacturing companies closed shop. Today, decoys manufactured by Dodge, Mason, Pratt and others bring premium prices from collectors.

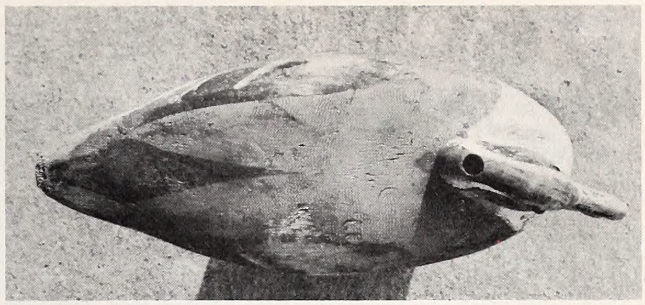
Apparently only in North America, because of a unique combination of circumstances, did decoy carving develop. The seemingly inexhaustable supply of waterfowl, the necessity of obtaining food and the freedom where a man could hunt all he wanted along the vast estuarial rivers and bays resulted in thousands of imitations. The advent of efficient and reliable weapons, namely the breech-loading shotgun was also a factor. None of these elements, however, would have produced decoys if the idea had not already been there: the idea of using a bird to catch a bird.

After the 1918 Migratory Bird Act was passed, duck hunting as a profession ended. With its passing, vast rigs of decoys disappeared. Some were sold to local sporting clubs but many simply were stored to be lost or discarded years later. Decoy manufacturing was now almost totally limited to rural hunters carving for their own use and a few commercial companies producing to meet sport hunters needs. The local hunters, being resourceful, used whatever materials were at hand. The sea and bays bestowed cords of usable driftwood after each storm and materials as exotic as teak and mahogany went into rigs. The commercial companies used easily worked woods and white pine was preferred. In some cases, cork, both natural and pressed composition was also used. White pine was used almost exclusively for heads.

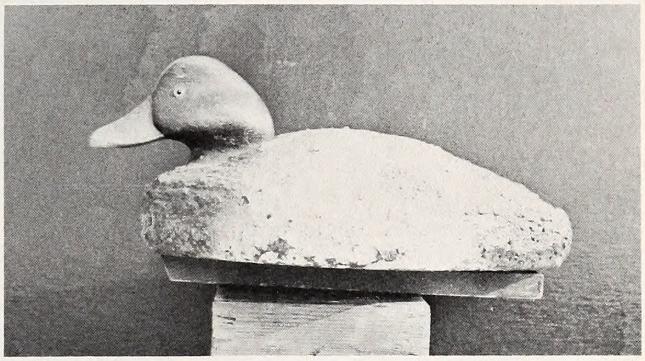
The era, from the market hunting days to the 1940's, produced some of our most collectable decoys. The waters of the Currituck and Pamlico sounds have been hosts to thousands of commercial and hand-made decoys. Since wintering waterfowl gathered here in vast numbers market hunting flourished and many a collectable decoy has been plucked from these waters.

Many old North Carolina decoys appear rather primitive and also show signs of rough use and even abuse. This stems from a combination of factors. Men with little idle time on their hands simply could not take the pains to make decorative decoys; they were interested in making a decoy that would require a minimum of maintenance. Bold men braving even bolder weather frequently had to retrieve their decoys as best they could. Thus it is unusual to find North Carolina decoys that have original paint and unbroken bills.

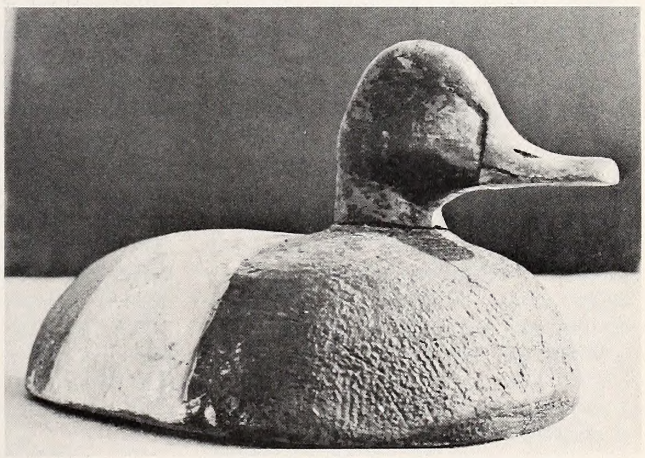
While few North Carolina carvers have ever attained the national recognition of the Dudleys of Knotts Island, many contributions have been by lesser or even unknown makers. An unknown hunter, with no thought of art or heritage, made decoys to be used, a tool to further his sport. In doing so he also expressed his own feeling for nature and his own desire to make something beautiful as well as functional. The decoys pictured are both hand-made and commercial blocks. All were collected in this state and represent beyond words the merger of function and art.



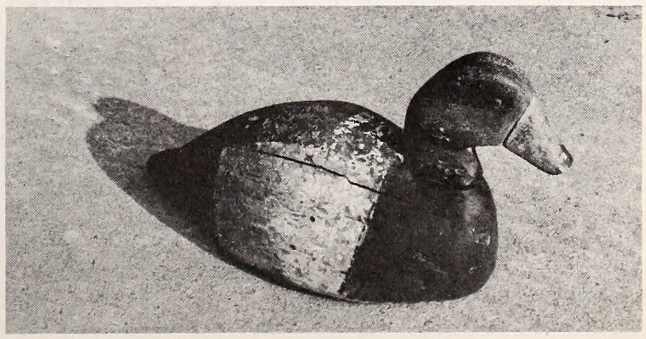
A top view (above) of a factory made balsa wood pintail drake. Considerable paint remains, and it shows a fine example of comb painting on the back.



Pressed cork was used to fashion this factory made scaup drake (above). It has a bold, durable design, and is perhaps fifty years old. The hand made wooden redhead drake below shows considerable use. The body design is rather primitive and typical of most North Carolina decoys. The bill and cheek carving is unusual for Tarheel decoys. 1890's.



This is a very old redhead drake (below) probably from the 1850-70 period. The original bill apparently was broken and shortened. It has many layers of paint and the glass eyes may be replacements for originals.



The Hot Hole BOOM

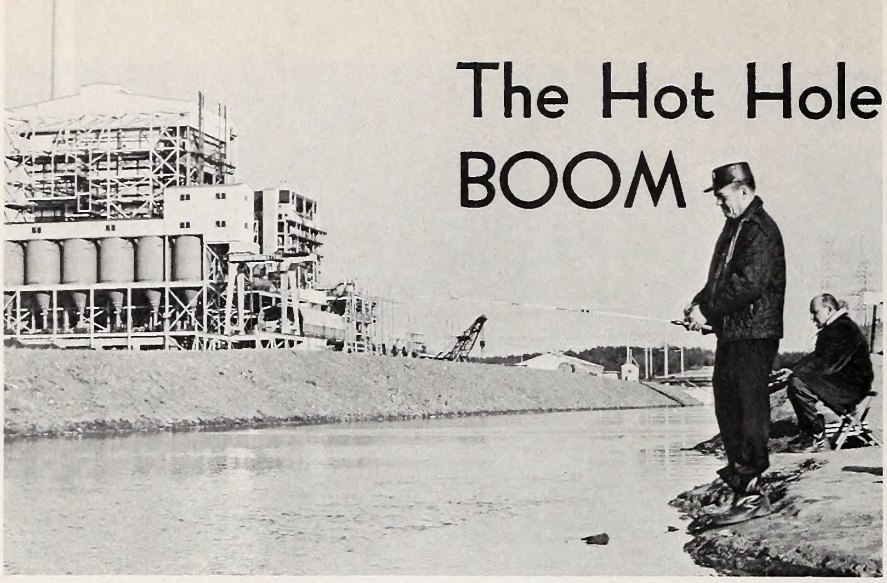


PHOTO BY JIM DEAN

By Roy W. Miller
Fishery Biologist

Power plants, whether they use nuclear fuel or coal, require large quantities of water for cooling. What happens when this super heated water is returned to the river?

VARIOUS experts have stated that the demand for electrical power in this country doubles every 10 years, and that most of this demand will have to be met by steam generating stations. Some of these will use coal for fuel, but the newer ones are likely to be nuclear powered. Steam generating stations require enormous amounts of cooling water, but nuclear plants require even more water than coal-fired plants because nuclear plants waste more heat. This cooling water will be returned to the environment considerably warmer than it was before being used by the power plant.

Water removed from a lake or river and returned at a temperature considerably in excess of its original temperature constitutes thermal pollution. Some of the larger steam electric generating stations in North Carolina release upwards of one million gallons of heated water per minute. Releases of such enormous amounts of heated water into lakes or rivers could alter the aquatic life in the receiving waters.

With the apparent discovery of "ecology" and "environmental concern" by the general public about 1969, the press, many writers, and "armchair" ecologists tried to predict the effects of thermal pollution on our lakes and rivers. Some of the effects feared possible were: (1) massive kills of fish, (2) dense blooms of obnoxious smelling algae, (3) disappearance of aquatic insects (a major food source for fish), and (4) replacement of desirable game fishes by more pollution-tolerant rough fishes such as carp and gar.

In order to discover the facts about thermal pollution, especially as it exists in North Carolina, a comprehensive 3-year study was initiated in 1968 on the effects of heated effluent from Marshall Steam Station on Lake Norman. This study was a cooperative venture of the North Carolina Wildlife Resources Commission, Duke Power Company, Johns Hopkins University, and Duke Power consultants from the Universities of North Carolina at Chapel Hill and Charlotte. Biologists with the Wildlife Resources Commission studied the fishes of Lake Norman, while the other cooperators studied Lake Norman water quality, plankton populations, and bottom dwelling algae and invertebrate animals. The value of this study has increased with the recent decision by the federal Environmental Protection Agency not to allow existing and future power plants to discharge heated effluent unless proof can be given that the heat will not be harmful to the existing aquatic environment.

Lake Norman

Investigations were centered around the Marshall Steam Station located on N. C. route 150 on the west shore of Lake Norman, approximately 25 miles north of Charlotte. Lake Norman, formed in 1963 by construction of Cowens Ford Dam on the Catawba River, has a surface area of 32,510 acres and a maximum depth of 120 feet. Lake Norman has at least 37 different species of fishes and supports an excellent sportfishery for largemouth bass, white bass, striped bass, bluegill, and catfish. There also is a limited commercial fishery for catfish.

An understanding of typical lake temperature stratification patterns is essential to an understanding of the results from the Lake Norman thermal study. Because the density of water decreases as temperatures rise above 39°F, most lakes in our area stratify, or separate into layers, during the warmer months of the year. Lake Norman stratifies into three layers during the summer. The upper layer, warmed by the sun, is known as the epilimnion. In mid summer, the epilimnion extends downward to a depth of 20-30 feet. The bottom layer which consists of cooler waters having temperatures in the high 40's is called the hypolimnion. In Lake Norman, this bottom layer has either very little or no dissolved oxygen and generally does not support fish life. There is a thin, middle layer intermediate in temperature between the top and bottom layers that is known as the thermocline. Actually, Lake Norman's stratification pattern is more complex and variable due to several factors, but for the purpose of illustration the simplest pattern will suffice.

The usual pattern is for stratification to develop in the spring. As summer progresses into fall, the epilimnion layer increases in depth. in October, the epilimnion of Lake Norman has cooled to the point where there is very little temperature difference between the epilimnion and the hypolimnion water layers. At this time a process known as "turnover" occurs, and the waters of the lake mix from top to bottom. The waters remain well mixed throughout the winter until stratification begins again in the spring. (See diagrams page 8)

Plant Marshall

Marshall Steam Station is a large, coal-fired, steam electric generating station with an output capacity of 2,136 megawatts. Between 1968 and 1970, the electrical output of Plant Marshall nearly tripled. The plant now is capable of pumping 85% of the average Catawba River flow that comes into Lake Norman.

Wildlife Commission fishery biologists collect fish with the aid of an electric shocking device. This electrofishing is conducted in the vicinity of the warm water release. Quantities and general condition of the fish are recorded. Special note of any diseases is made.

PHOTO FROM THE AUTHOR

The power plant has a unique water intake system utilizing a skimmer wall located on the north side of N. C. route 150 that extends from the lake surface down to a depth of 60 feet. The cooler waters found at depths of 60 feet and below pass under the skimmer wall and are collected in a 200-acre intake cove before being pumped through the power plant. As this cool water passes through the plant condenser pipe system, it picks up heat from the spent steam used for power generation. The heated water then is discharged into a mile-long canal and receiving cove on the south side of N. C. route 150. The average increase in temperature from intake to discharge is 16.6°F.

Thermal Effects On Fishes

The effects of the heated effluent released from Marshall Steam Station on the fishes in Lake Norman vary greatly with the seasons of year. During the colder months of late fall, winter, and early spring, the heated effluent attracts fishes to the discharge area. White bass, striped bass, crappie, and largemouth bass are attracted to the heated effluent at this time of year. The threadfin shad, which is not native to North Carolina, is quite sensitive to cold shock and usually begins dying when water temperatures approach 45°F. The heated effluent in Lake Norman allows this species to survive through the winter and thereby eliminates the necessity of annually restocking by the Wildlife Resources Commission.

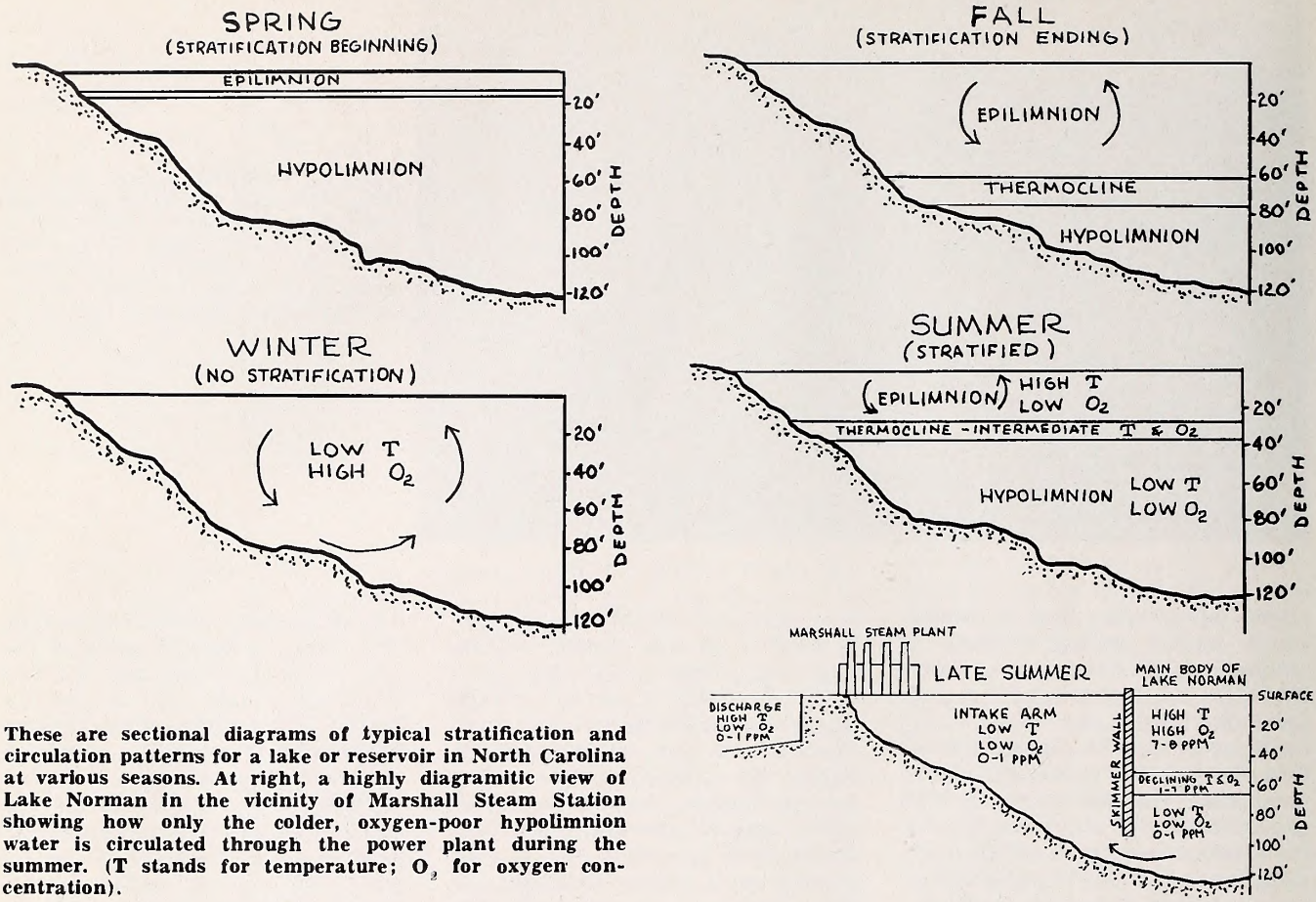
Netting and electrofishing samples showed tremendous increases in catches in the heated effluent over other areas of the lake that contained water of normal winter temperatures. Fishes not only were abundant in the heated effluent during the winter, but they were actively feeding. As shown by Saturday angler surveys run from spring 1969 to spring 1971, a substantial sport fishery developed in the vicinity of the Marshall discharge during the colder months.

The 5,610 fishermen interviewed during this period caught a total of 5,220 fishes. The catches during the colder months were predominantly game species. White bass was the species most often caught (40% of the total catch for the two-year period). The second most important species was the largemouth bass (23% of the total catch), followed by crappie (12% of the total catch). The remaining 25% of the sport catch was made up of striped bass, bluegill (bream), yellow perch, catfish, and carp. The striped bass harvested were the results of stockings by the Wildlife Resources Commission, and represented 2% of the total number of fishes caught in the heated effluent.

During the warmer months of the year, the situation was entirely different in the Marshall discharge area. The number of game fishes in the heated effluent dropped off sharply, as was noted in both netting and electrofishing samples, and in fishermen's catches. Sport fishing catches during the summer months in the heated effluent were dominated by rough species, and fishing pressure decreased as fishermen moved to other areas of the lake. The desirable sport fishes were not chased out of the discharge by excessive temperatures, but rather by very low dissolved oxygen concentrations in the heated effluent resulting from the use of cool, oxygen-poor, hypolimnion water at the Marshall intake. While the cooler waters utilized in the intake meant the discharge waters were similar to normal lake surface temperatures, the conditions of low dissolved oxygen in the discharge area were suitable only for rough fishes tolerant of low oxygen water, such as catfish, carp, and gar.

Fish Diseases

When fishes moved into the heated effluent during the colder months, they became exposed to the dangers of gas-bubble disease. Some of the fishes captured in the heated effluent had a condition known as "pop-eye" (see Figure ....). The eyes of these fishes were bulged by gas bubbles that had accumulated behind the eyeball. The force of these bubbles behind the eyes was so great in a few white bass specimens, that their eyes actually were blown out of the sockets, leaving the fish completely blind. Gas bubbles often were noted in the eyes, fins, under the skin and scales, and in the blood vessels of these same fishes. A fish exhibiting these symptoms is said to have gas-bubble disease. The disease apparently reached its peak late in the winter of 1971 when 71% of the white bass we captured in the heated effluent had "pop-



These are sectional diagrams of typical stratification and circulation patterns for a lake or reservoir in North Carolina at various seasons. At right, a highly diagramitic view of Lake Norman in the vicinity of Marshall Steam Station showing how only the colder, oxygen-poor hypolimnion water is circulated through the power plant during the summer. (T stands for temperature; O_2 for oxygen concentration).

eye" or gas bubbles in their eyes. It should be noted, however, that while 13 species of fishes showed symptoms of the disease, there were some species that had no external signs of the disease.

Research conducted in the winter and spring of 1972 revealed that the heated effluent released from Marshall Steam Station contained an excess of dissolved gases, particularly nitrogen. This excess nitrogen, known as nitrogen supersaturation, caused the fishes to experience a condition similar to the "bends" that can injure or kill scuba divers when surfacing from the depths too quickly. The amount of gas supersaturation was related to the amount of increase in water temperature caused by the power plant.

Current studies of another disease, the "red-sore" disease, on Lake Norman fishes caused by the parasite *Epistylis* have shown that the disease virtually disappears during the winter months after reaching a peak in the fall. However, red sores were noted on a few (less than 5%) of the fishes captured during the winter in the Marshall discharge area. Apparently the *Epistylis* organism can remain active in the heated Marshall discharge at a time of year when it is not active in other parts of the reservoir. Still, "red-sore" disease has been very abundant in other reservoirs of the Catawba and Yadkin Rivers that do not receive releases of heated water.

Food, Growth, and Reproduction

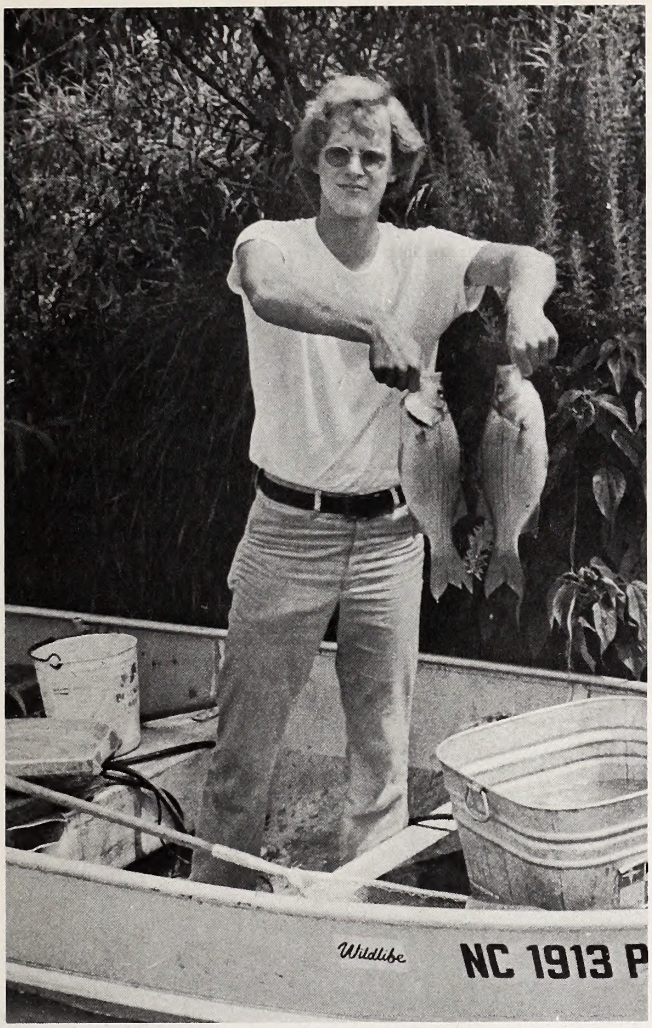
In addition to studying the seasonal abundance of fishes in the discharge area, studies also were made of their growth, food habits, and reproduction. Bluegill in the discharge area grew slightly faster than bluegill in other areas of the lake. This is reasonable when one considers that the growth of fishes normally slows as the water temperatures decrease during the winter months. Those fishes inhabiting the heated effluent were able to continue growing during this time. The diets of game fishes such as white bass, largemouth bass, and others in the discharge area consisted primarily of threadfin shad. These species in other areas of the lake ate a greater variety of aquatic organisms.

The 65 to 70°F water temperatures present in the Marshall discharge during winter encouraged some fishes such as largemouth bass and threadfin shad to spawn about one month earlier in the spring than in other areas of the lake away from the influence of the heated water.

Water Quality, Plankton, and Insects

Other studies conducted in the vicinity of the Marshall Steam Station resulted in the following major conclusions: The effects of the power plant on the water quality of Lake Norman generally were localized to the discharge receiving area. The farther away from the power plant, the less noticeable were its effects on the temperatures and dissolved oxygen concentrations in the lake. The power plant increased the average yearly temperatures of the entire lake by 1.3°F. The heated water released from the plant tended to spread out on the surface of the lake. This discharge water lost its excess heat by natural processes of heat transfer.

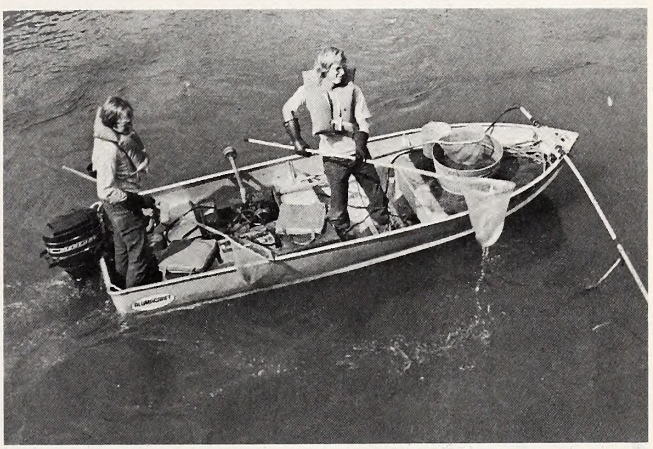
The heated discharge had little detectable effect on the plankton



Angling is affected seasonally by the warm effluent waters. Fish, like these electrofished white bass, are attracted to these waters in the winter.

PHOTOS FROM THE AUTHOR

Many of the fish captured at various times during the year display a parasite-caused disease. Epistylis, and an ailment known as gas bubble disease, which results from an excess of dissolved gases, particularly nitrogen.



Many of the findings from this project will enable engineers and biologists to make more intelligent decisions concerning future power plant construction.

populations of the lake. No blooms of obnoxious smelling algae were noted. There were fewer types of bottom dwelling animals living in the discharge area, but the types that were present seemed to be more abundant than in other areas of the lake. For a more detailed presentation, see articles by the individual authors in the project completion report.*

Summary

The effects of the Marshall discharge on the fishes of Lake Norman can be summed up in one word: mixed. A benefit of the plant discharge is that threadfin shad can survive during the winter and provide a continuous supply of food for game fishes. Another benefit to the fishermen is the existence of a substantial sport fishery during the traditionally slack winter fishing season.

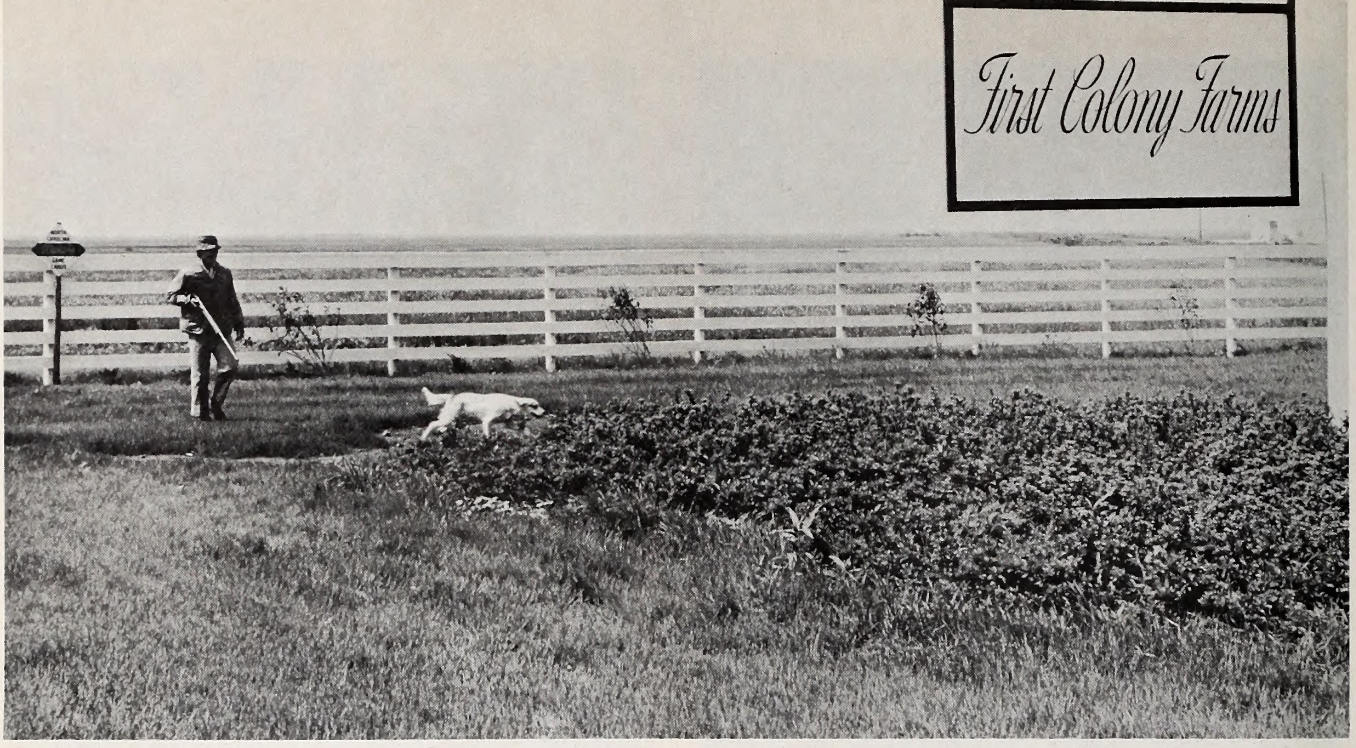
A drawback of the power plant is that the discharge area is not suitable habitat for game fishes in the summer months. Fishermen are advised to fish elsewhere on Lake Norman during the summer if they want to catch the more desirable game species. Also, some of the fishes that are attracted to the heated effluent during the colder months may still be in danger of developing potentially fatal gas-bubble disease.

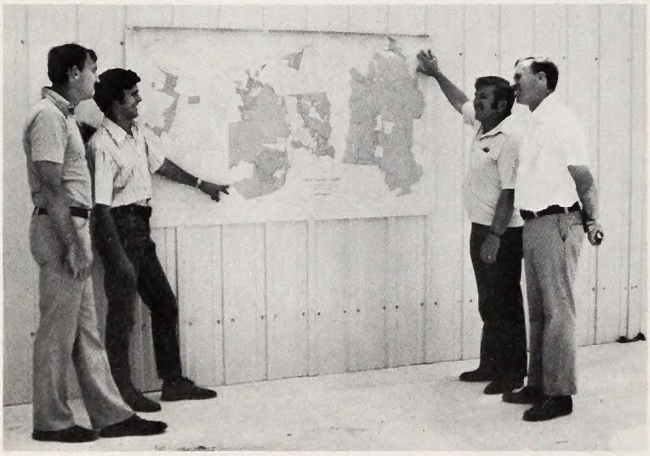
Dr. Loren Jensen of Johns Hopkins University made some recommendations in the project completion report concerning future operation of Marshall Steam Station. There recommendations would apply to other proposed power plants, especially if they are to have a design similar to Plant Marshall's. He recommended that the intake system of Plant Marshall be modified to allow mixing of surface and bottom waters during the summer in order to increase the dissolved oxygen concentrations in the heated plant discharge. Such a move should help the summer sport fishery if discharge temperatures do not become excessive for the game fishes. He further recommended that the danger of gas-bubble disease to the fishes could be reduced by lowering the discharge temperatures somewhat during the winter. Duke Power representatives indicated that the latter recommendation already has been adopted.

Obviously, the ecological disasters which a few people may have feared for Lake Norman did not come to pass. Rather, the power plant has had some beneficial as well as some detrimental effects on the fisheries of the lake. This study and others like it should enable more intelligent decisions to be made concerning future power plant construction. ◆

* Environmental responses to thermal discharges from Marshall Steam Station, Lake Norman, North Carolina. 1974. L. D. Jensen (Ed.) Report No. 11 Available from: Electric Power Research Institute, 3412 Hillview Ave., Palo Alto, Cal. 94304. Price $8.00.

First Colony Farms



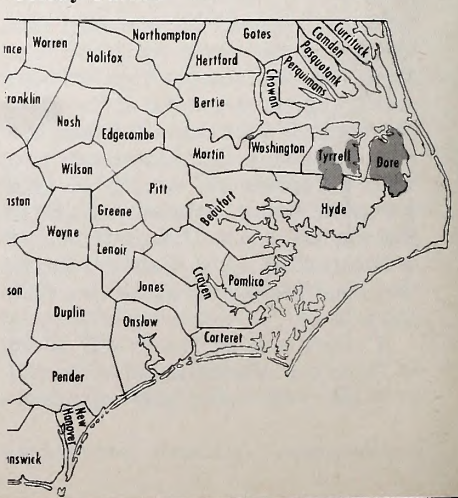


They're called "superfarms," among other things, and it appears that they are here to stay. One such example is First Colony Farms, Inc., in Dare and Tyrrell counties which covers some 375,000 acres, making it the largest single "farm" in North Carolina. Although much of the area now owned by First Colony has been tilled for many years, these vast areas were pocosins, which are semi-wet, thinly wooded sections with poor drainage. "Our objective is to clear 12,500 acres annually until we reach 200,000 acres of cropland and pasture by 1988-1990," says Cy Rich, Jr., Agronomist for First Colony Farms.

This clearing and draining has changed the face of Dare and Tyrrell counties. Even if nature steps in with unusually wet weather and boggy soils to stymie the gigantic farm machinery being used, vast areas of this rich wildlife area will be altered one way or another, perhaps for the foreseeable future.

With such superfarms, as an apparent fact of life, the Wildlife Resources Commission began a more than casual inspection of First Colony several years ago. The final outcome of such land changes are unpredictable. Assurances of environmental maintenance have come from First Colony officials. Quentin Bell, Timberlands Manager with First Colony reports that several environmental practices have become farm policy. These practices include greenbelts, which will cover almost half of the 375,000 acres ownership, water monitoring sites administered jointly by state agencies and First Colony, windrow and ditch management vegetation which leaves cover for quail and songbirds, and the public hunting program under which

A map showing the extensive holdings of First Colony is viewed by Farm Timber land Manager Quentin Bell (left); Commission Wildlife Biologist Technician Brian Hyder; James Ginn, Farm Security Supervisor; and Cy Rich, Jr., Farms Agronomist.
This spoil bank (above) is already overgrown with volunteer food plants such as sumac and poke berry. The map below shows the general location of First Colony Farms.



PHOTOS BY REX SCHMIDT AND LUTHER PARTIN

Quail and other small game hunting is available in the vicinity of spoil banks which are in the process of being cleared and wildlife plantings established.

Standing water in some of the areas being prepared for cultivation may be a problem for the Farms. Such areas do provide cover and some food for small game at present. Weedy spoil banks between cultivated fields offer wildlife food and cover (above right). Heavy grass and weed cover (below right) will likely be further enhanced by food plantings. It takes a pile of fertilizer (below) to do the massive job undertaken by First Colony Farms.

262,500 acres of First Colony Farms are open to North Carolina sportsmen under the Wildlife Commission's Game Land Program.

There's no doubt there will be great hunting opportunities on the vast First Colony Farms with the continued cooperation of the Wildlife Commission and Farm personnel. The future of superfarms is yet an unknown quantity; however, with the proper commitment and cooperation, conditions favorable to many wildlife species can be maintained and wildlife populations managed for the enjoyment and utilization of all those interested in these wildlife values.

PART 1

THE BOBWHITE QUAIL

by Rod Amundson
Color Photos by Beverlie Joyner

The story of the bobwhite is one with many facets. This adaptable and popular game bird is one of North Carolina's more successful game management episodes.

So much has been written about the bobwhite quail that it would be futile to try to express any new concepts in an article of this type. Our purpose here is simply to point out some pertinent facts regarding bobwhite and its relationship to North Carolina sportsmen.

Most of the knowledge gained by sportsmen as to the habits of quail is obtained by working behind gun dogs and sighting down a shotgun barrel. Sportsmen who take the time or have the time to observe quail the year around are few in proportion to the thousands of Tarheel scattergun enthusiasts who go bird shooting each fall.

History

Altogether, there are five general types of quail in the United States, including seven races of bobwhites. The species native to North Carolina is the Eastern Bobwhite *(Colinus virginianus)*. Attempts have been made to introduce other species, but these turned out to be a total failure. Some thirty years ago quail hunters heard of an excellent species of quail native to Mexico. Although smaller than the bobwhite, these birds were reputed to be more prolific, would hold to dogs better, and were generally a better game bird.

The opposite turned out to be true. The Mexican quail not only were not as prolific as the native bird, they crossbred with the bobwhite. They roosted in trees instead of on the ground, would not hold to dogs, and for awhile quail hunters feared the crossbreeding would ruin the entire bobwhite population by producing a strain of wild-flushing birds of inferior sporting quality. But nature ran its course and the Mexican birds and their descendents entirely disappeared.

Coturnix quail, a small Mediterranean variety, were highly touted in national outdoor magazines as the best thing since the introduction of the ringneck pheasant.

A few were stocked in North Carolina, as much on the demands of bird hunters as for an experiment. The birds simply and promptly disappeared. These are probably the same quail that fed the Children of Israel in their trek through the wilderness. They are known to migrate across the Mediterranean from Africa to Europe, and often land on ships for a rest during the journey.

Bird hunters—devotees of quail shooting—are as partial to their sport as fox hunters or beagle advocates are to theirs. They fairly live for the opening of the quail season, and support several dogs the year around just for the pleasure of shooting over them a few weeks in the fall.

It is inevitable that a sport as popular as quail shooting takes a heavy toll of birds each year. Quail are a classic example of a species caught between an ever shrinking habitat and an ever increasing hunting pressure. Despite these two reducing forces, quail have managed to maintain a secure position in the list of wild game.

The ill-fated coturnix quail was tried in North Carolina without success. The "native" bobwhite seems to be our best bet.

The male bobwhite has many of the same markings as the female, but the white eye stripe and white throat set him apart from the female . . .

which displays the buff stripe and throat. Size of the sexes is about the same, although individuals vary considerably in size.

There are more quail in North Carolina today than there were in the days of Sir Walter Raleigh. To a degree, agriculture is beneficial to quail; certainly the haphazard farming methods used in colonial days, with abundant weed patches, inefficiently harvested grain, and the miles of rail fences with their growth of shrubs and vines, provided an ideal combination for the production of quail. Recently, however, metal fences, modern harvesting machinery, clean farming, and fence-to-fence cultivation have made living a difficult problem for quail. Combined with growing hunting pressure, these agricultural practices have reduced quail populations to a point where the length of the season and the size of the daily bag depend directly on wintering and nesting conditions. A severe winter and a wet, rainy nesting season could easily reduce quail hunting in North Carolina to a mere gesture toward satisfying the sportsmen's demands. Such a calamity can happen any time. An understanding of the habitat requirements of quail is necessary to the formulation of plans for corrective and preventative measures.

General Characteristics

A wingspread of 14 to 16 inches belies the fact that the average bobwhite weighs but four to six ounces. Quail are built like chickens, with a short, plump body and short, curved wings. Markings of sexes are similar in pattern, with the males having brighter hues, and the cheek and throat are white.

Quail are gregarious birds, living in groups throughout most of the year except during the mating season when they pair off and begin the task of bringing forth the young. Coveys vary in size and constitution. In late summer a covey may consist of the parent birds and their offspring, and include the young of other birds which might have succumbed to predators. Mortality during the breeding season is high, and a family group of birds may contain the young of several other pairs. On the other hand, adult birds, having lost their own young, may adopt the offspring of others.

Despite the willingness of a covey of quail to accept outsiders, the acceptance of strangers ends when the cover within the locality of the covey has been saturated with birds. Apparently, when a covey reaches proportions beyond which the amount of food and cover would be inadequate for additional birds, members of the covey will drive off any drifters which might like to join the flock. This phenomenon has been observed and recorded by David Damon, a biologist working with the Nebraska Game, Forestation and Parks Commission, and is an important argument against stocking pen-reared birds in localities where the habitat is already saturated with quail, however small and infrequent the coveys in that area may be.

Despite the heavy toll of birds taken each year by hunters, predators, disease, and severe weather, quail have been able to maintain populations of significant numbers. The urge to nest and bring forth young is strong, and a pair of birds will renest if the forces of nature interfere with the success of first attempts. This fact accounts for late broods of young. Half-grown birds have been observed in the field long after the shooting season has opened. Late hatches give rise to the belief that quail produce two broods per year. Such is not the case. Once a pair of birds has brought off a hatch of eggs, nesting is finished for the year.

The family life of quail is dramatic. Courtship begins in the early spring when male birds fluff their feathers, prance and strut to win the favor of a mate. Once the nuptial alliance has been made the birds indulge in a two weeks honeymoon before the nesting activity is begun.

Nests are more or less haphazard affairs, usually constructed in a small depression scratched in the soil, and lined with whatever vegetation seems to be convenient. Bobwhite himself takes over the job of building the nest. He usually selects an area of relatively short but dense vegetation, along a field border, or, too often for the welfare of the future family, in a hay field or a grain field where harvesting machinery may later destroy the nest and the cover and make another attempt at nesting necessary. The old rail fence once provided an ideal nesting spot with its growth of tall grasses and small bushes, but this in-

stitution is fast disappearing from the North Caorlina scene. Where quail nest in alfalfa or clover fields, conscientious farmers make attempts to save adult birds, if not the nests, by the use of flushing bars. These are mechanical devices which fasten to the sickle bar of the mower and tend to frighten brooding birds from their nests.

Once a nest has become established, the female deposits eggs in it at the rate of one per day until from 12 to 16 snow-white eggs have been laid. Having sired the prospective chicks, selected the nesting site, and built the nest, bobwhite makes himself further useful by "sitting in" to help incubate the eggs. The 23-day incubation period is a critical part of the quail life cycle. Spring rains and floods can ruin the nest and chill the chicks to death after they have hatched. A host of predators enter the drama. Snakes, skunks, foxes, raccoons, crows, hawks, owls, cotton rats, stray cats, self-hunting dogs, weasels, and mink are potential destroyers. To these are added the hazards of agricultural operations. There have been many cases where the female parent has been killed by one means or another, and the loyal cock is left with the task of completing the hatching and caring for the young. The paternal instinct is so strong in the bobwhite that unmated males have been known to adopt and rear artificially incubated young!

Quail chicks are tiny, delicate creatures. One might wonder how such a diminutive bit of fluff can be endowed with sufficient strength to break through the rather hard, tough shell of the egg. A parable on the infinite care of Providence is the formation of a small, sharp nail on the chick's beak. This is used to chisel a small hole in the shell, allowing the youngster to breathe, gain strength, and about 48 hours later, to emerge into the outer world.

The chicks, from the moment they are hatched, are capable of getting around very well by themselves, but most of the hours of their first two weeks are spent under the warm protection of their parents' feathers. They chill easily, and must be kept as dry as tinder at all times. At the end of two weeks, however, the soft down with which they emerged from the egg has been replaced with enough feathers to enable them to make short flights. At this time they weigh less than an ounce. A voracious appetite for small insects, seeds, and tender shoots of grass and other vegetation gives the youngsters rapid growth, and by the time they are three months old they have attained their adult plumage and can fly and roost with their elders.

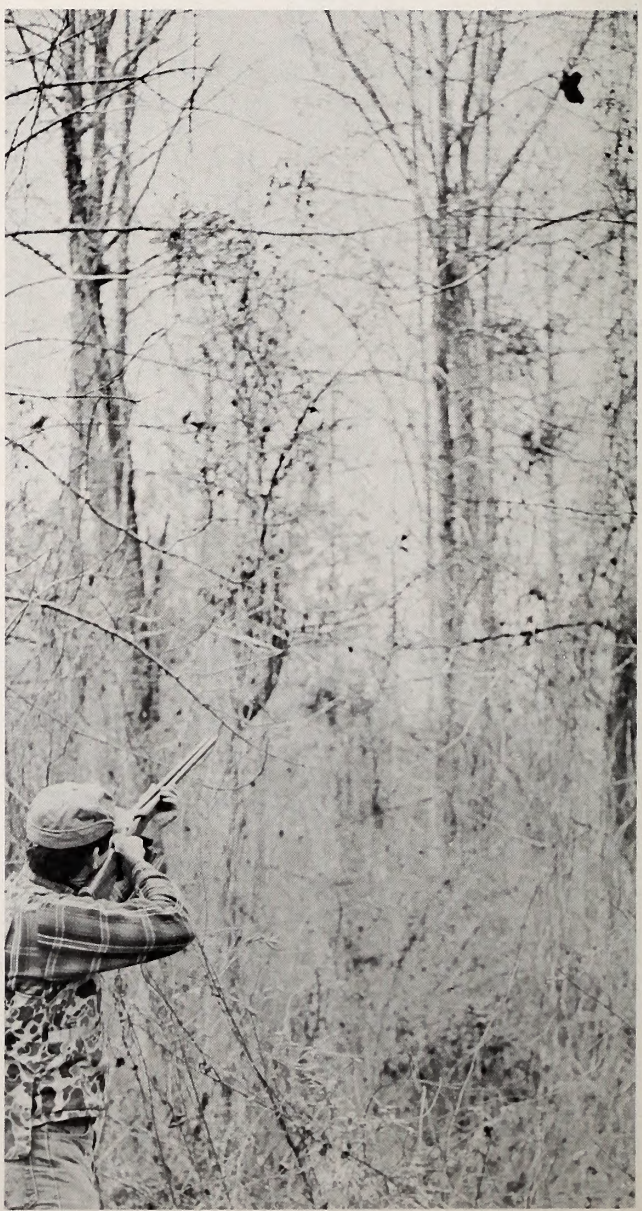
Being ground dwellers, quail depend for their livelihood on foods they find on or near the ground. Despite this restriction, the food of quail is extremely varied, almost an index of the insect and vegetable life indigenous to their habitat. Unlike the diet of certain game and fur-bearing animals, the food habits of quail are entirely beneficial from an economic point of view. Every farmer knows the value of several coveys of quail on his farm in destroying insects and weed seeds. It is true that quail take grain, but most of the grain they consume is already lost to the market and would otherwise be wasted. Quail may take a small amount of grain from the field before harvest time, but even if each bird ate its weight in wheat or oats, the loss to the farmer would be small indeed.

Quail like to feed near protective cover. This fact has an important bearing on quail management (see below). They have a liking for fruits and berries, but seldom invade orchards or gardens to the detriment of either. They may jump up from the ground to reach low-hanging raspberries or blackberries, or fly into a tree and pluck the berries within reach. One hears tales of adult quail flying low over ripened wheat, beating the grain off the stalks to the ground where the young can eat it. Quail are probably less imaginative than the people who indulge in such daydreaming.

In North Carolina, as elsewhere, the period of winter and early spring is a critical one for quail from the standpoint of food. As has been mentioned, modern harvesting methods leave little waste grain on the ground for quail to eat. Often, winter snows cover what little food is on the ground, and unless there is plenty of seed-bearing growth above the snow line, the birds may suffer from a food shortage. Fence-to-fence farming, neat and efficient-appearing though it may be, has done more to reduce quail populations than the shotgun ever could. ▲▼

Next Month: Quail Management

PHOTO BY LUTHER PARTIN



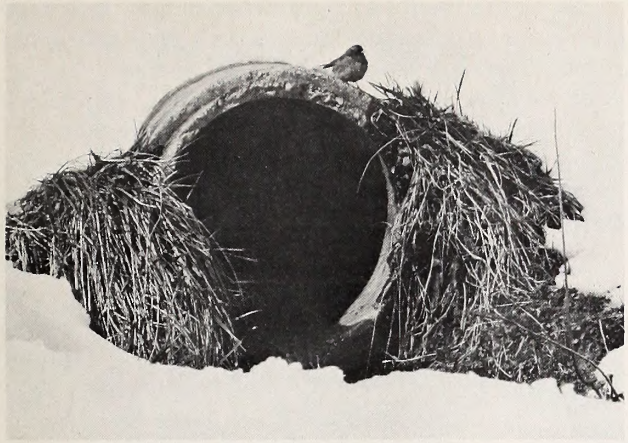


PHOTO BY JIM LEE

The World's Most Unusual Census

J. Merrill Lynch

EACH year during the Christmas holiday season, thousands of Americans and Canadians venture out and brave the elements of the outdoors to observe and count birds. In all 50 states and ten Canadian provinces, they tromp or wade through marshes, swamps, fields, mudflats, or even through suburban yards in search of birds.

These people are conducting the annual Christmas Bird Count, a continent-wide census sponsored by the National Audubon Society in conjunction with the U. S. Fish and Wildlife Service.

Robert Arbib, of the National Audubon Society, incidentally the world's largest private non-profit conservation organization, has called the count "the world's most popular, intensive, and perhaps longest running cooperative scientific field work project."

And, remarkably, the count is undertaken almost entirely by a dedicated corps of volunteer amateurs. Anybody with a sharp eye, a keen ear, and knowledgeable in the art of bird identification is qualified to participate. Amateur birdwatchers across the country put their skills to work on count day, amassing an enormous volume of much needed scientific data on birds. And at the same time they have a good time competing against other birdwatchers on rival counts.

Christmas Bird Counts enable scientists to keep track of the increase or decline of various species, learn about life cycles, and add to the overall knowledge of bird's winter lives and migratory habits.

Competition is intense throughout the country between rival counts. Each local count strives to outdo its rival by getting the most unusual or rare finds. As an example, two of the biggest rival counts in North Carolina are Wilmington and Bodie-Pea Island (Outer Banks). Every December compilers of these counts are busy recruiting participants and "staking out" unusual birds in an effort to outdo the other. Wilmington holds a narrow lead in the series! Birdwatchers from as far away as Florida come up to participate in these counts.

To further illustrate this competitive spirit, the 49 counters of one Florida count a few years ago spent 222 man-hours afield; drove over 800 miles—680 by car, 131 on foot, and one by canoe—and tallied **204** species plus over 150,000 individuals. And all of this is just one day!

The rules of the count are basically simple. Each count is taken during a single 24-hour (one day) period within a three-week time span during the Christmas season. The count is limited to a 15-mile diameter circle (176 square miles) with a pre-selected center. Any experienced birdwatcher can establish a count in or near his hometown, under the auspices of the Audubon Society, as long as the count does not overlap one already established.

A month or more before the count period, the compiler establishes a date for the count to be held. He informs other birdwatchers in his area of this date and begins drawing up plans. The participants (who number from ten up to as many as 200 people) are then assigned specific regions within the count circle to cover on count day. They are divided up into parties and on count day cover their particular area, listing all bird species they see or hear, and recording all individuals of each species. For example: Cardinal, 126; Bluejay, 294.

At the end of the day, all the parties meet together to sum up their totals. A complete list of all species and individuals is then compiled for the total count circle. This total represents an **estimate** of the actual number of birds present within the count circle. It is impossible, of course, for all birds to be recorded from such a large area, but by using several computations a reasonably accurate estimate can be ascertained.

This information is then sent in to the National Audubon Society, where it is processed and edited, and later published in an international scientific bird journal, **American Birds.**

The popularity of the Christmas count in North Carolina is demonstrated by the fact that 22 counts were conducted last year involving 518 participants. Roanoke Rapids birdwatchers saw a total of 98 species and over 65,000 individuals to lead all the inland counts. Bodie-Pea Island led the coastal counts with 154 species. Nationally, over a thousand counts were conducted involving almost 25,000 participants.

The Christmas Bird Count is the most popular wildlife survey in the world today. It has enjoyed an enormous growth from a meager beginning in 1900 when 27 people participated in 25 counts across the country. During this holiday season while most Americans are enjoying turkey dinners and football bowl games, birdwatchers will once again dust off their neglected binoculars and comb neighborhood woodlands and fields in search of birds—Christmas Bird Count fever is in the air again!

The $13,000 Buck— It Could Happen To You

by A. H. James

IT was a beautiful day in the Rockies on October 29, 1969. There was a light wind out of the northeast. The skies were royal blue and the high clouds drifted like feathers.

I had parked my car at a restaurant on U. S. 6 in Clear Creek Canyon about four miles east of Idaho Springs, Colorado. I was a Deputy Sheriff in Gilpin County and numerous times I had seen several mule deer while I was riding to and from the Sheriff's Office in Central City, Colorado.

I went in and got a cup of coffee with some friends and told them I was going to get one of those big bucks. I got my 30/06 Springfield with a KV 60 Weaver Scope and a bandoleer of ammo. I had my single action Colt .45 as a sidearm.

I walked across the highway and up a jeep road going into the timber. There were other hunters there that had gone in early that morning. I had walked about half a mile and decided to sit and have a drink of water and look around.

Just as I was about to "scope" the side of the mountain, I heard several rifle shots to my left and right. There were two herds of deer and the party on the right scored and got a nice buck. That party came out but the party of five or six to my left a quarter mile away stayed. The shooting stopped and the deer left. After about an hour, five or six high-powered rifles opened up. Through my scope, I could see two bucks and a doe going up the side of the mountain. The shots were falling short and you could see the dirt and rocks fly from the shots. They were falling short by a good 10 feet.

The deer continued to walk up the side of the mountain facing me. I estimated them to be 600 yards away. The night before I had loaded a box of 150 gr. P.S.P. Speer with 43 grains of 4895. This is a very good flat shooting bullet. I chambered a round and aimed about six inches high and just behind the right fore leg. This was a beautiful, broadside heart shot. I aimed at the lead buck, a very fine five pointer. I squeezed the trigger and the rifle bounced. I could see the big buck shake his head. He went to his knees and laid down. The other buck and doe took off up the mountainside.

I took another drink of water and started the long trek up the side of the mountain. It was at least a 30 percent grade. After a 25 minute climb, I got to the deer. The bullet had hit perfectly. I had missed the shoulder and leg, and gone between the ribs and into the heart. The kill was instantaneous. The distance from the rock where I fired to the deer was 765 paces!

I stuck the deer and field dressed him, had some more water and started the long trek back to the car. (After I fired the shot, and killed the deer, I chambered another round and put the safety on, just in the event the deer wasn't dead.)

The trip down the mountainside was unbelievable. I must have gone through a thousand cactus and big boulders.

After about an hour of dragging this estimated 350 pound buck, I finally got to the jeep trail. I had drank my canteen dry and was sweating and panting. I saw a blue and white Ford Bronco coming from out of the high country. Where I was hunting was about 8000 feet. I flagged the Bronco down and ask the occupants, a man and his wife, if they could please give me a drink. They did and I was very grateful. They commented on the size and beauty of the buck. They asked if I was alone and I said yes and told them my car was at the highway. They offered to drag my deer down to the highway and I was very much obliged. We tied the antlers to the rear bumper and I stood on the bumper holding on to the spare tire with my left hand and the rifle (loaded) with my right hand.

The antlers were perfect and I didn't want them to get broken off. We hit a big rock and the head started to turn. I took the butt of the rifle to use to straighten the head by hitting the antler. One of the prongs knocked the safety off and one hit the trigger. I heard a tremendous roar and saw a big ball of orange and red fire. I stood on the bumper for a few moments and felt a burning in my left chest. I yelled to the man driving the jeep "My God, I've been shot!"

I looked at the sky and it started spinning around and I fell to the ground. The jeep stopped and the people got out and ran to me. I was laying on a rock and cactus and they picked me up to lay on a flat spot. I yelled and told them not to touch my left arm because I thought it was broken. They tried to take off my jacket but for some reason they didn't. The woman ran to the jeep and got a blanket her little girl left there to wrap her doll baby. The lady ran back and with her husband's help they rolled me on my right side. She balled up the baby blanket and stuffed it in the hole in my back. The bullet had blown away part of my shoulder blade, ribs and my lung out of my back. I was going into shock and getting thirsty.

Another hunter happened by and went to the highway. He called the chief of police, Mr. Doug Avery at Idaho Springs, on the radio and told him what happened. He called Dr. Fowler who had a jeep with the front seat out and a stretcher in its place. Being a deputy, I knew all of the Colorado State Patrol and other peace officers. There was a call to the State Patrol that "Jesse has been shot." An ambulance was brought to the restaurant while Dr. Fowler went after me. I don't remember much from then on except begging for water; the chief said I'd get water if it was the last thing I got on this earth and then

• **Continued on page 26**

Saving Steels and Upper Creeks

FISHING

by Jim Dean

● Good news. Both Steels and Upper creeks are alive and well. For those who may not know, these two fine "native" trout streams seemed doomed back in 1972.

Already work was underway to renovate 14 miles of N. C. Highway 181 between Morganton and Pineola. The road straddled the ridge between the two creeks, and it did not take any imagination to guess what would happen when the massive grading and filling began to pour tons of silt down the steep mountainsides and feeder branches into the creeks.

The streams would be choked with silt. No longer would they be capable of producing wild, streambred trout. Worse, it was anticipated that it would take many years for them to recover.

But now, some four years later, instead of doom and disaster, the story is one of success. The road has been renovated, but the trout streams have survived.

This month, Bob Brown, a fisheries biologist with the N. C. Wildlife Resources Commission, furnished the following encouraging report:

"As you know, we've been constantly monitoring these two streams throughout the road construction," said Brown, "and one of our key concerns was whether or not the trout would be able to spawn successfully. We've checked them each spawning season, and we've found the trout were actually capable of producing young. In fact, the streams now show little visible silt except in large pools and along their lower stretches. We're past the rough period and the streams appear to be recovering rapidly.

"In fact, much of the silt that had accumulated seems to be washing out," continued Brown. "We only lost one year-class of trout, and this was the result of the Memorial Day Flood in 1973. We lost the fingerlings that had recently been spawned and the result is now a lack of nine to 11 inch trout in these streams. However, this is also true of other wild trout streams in this area, and was not a direct result of the road construction. In other words, the streams have survived the threat of silt very well."

It was no accident that Steels and Upper creeks were saved. It is the direct result of a lot of hard work and cooperation between a half dozen agencies and groups. While Brown and his assistant, Joe Mickey, tend to play down their roles in saving these creeks, it is undoubtedly safe to say that had it not been for their constant attention and coordination, both creeks would have bitten the dust.

Shown are two devices used to stop erosion and silt drainage into Steels and Upper Creeks. The burlap silt fences worked very well, but permanent log silt dams were needed to back them up since the burlap eventually gave way. Brush barriers (in front of silt fence) proved relatively ineffectual.

Credit for saving these creeks is shared by such diverse groups as the U. S. Forest Service, Trout Unlimited, the N. C. Highway Commission, two Asheville construction companies (Asheville Construction and Blythe Construction), the 101st Airborne Division of Ft. Campbell, Kentucky, and of course, the Wildlife Commission.

"Floyd Brooks, who is no longer with the Forest Service, was a tremendous help," said Brown. "He and District Ranger John Kennedy, took an active interest in saving these two streams, and in the early going, it was the Forest Service which put the pressure on the Highway Commission to take the proper steps to protect the streams from silt.

"Trout Unlimited also played a major role, and many of this organization's members helped work on the project," said Brown. "Trout Unlimited also helped spread the word about what we all stood to lose if the streams were choked with silt."

The State Highway Commission, reluctant at first to spend the time and money to provide adequate silt controls, soon realized the importance of this goal and with the guidance of engineers David Patton and Bob Crisp, began a cooperative program that proved highly successful.

Both the Asheville Construction Company and Blythe Construction worked hard to carry out the recommendations given to them by the silt control experts. Also, the 101st Airbone Division sent men in to help construct log silt barriers as part of a training program. Brown estimates that more than half of the log barriers were built by the soldiers.

"It's important to understand that this was, in many ways, a test," explained Brown. "We not only wanted to save these streams, but we also wanted to learn which techniques could be used most effectively in future projects. Also, we wanted to show that it was possible to achieve this kind of success through the cooperative efforts of several groups and agencies."

There is not really room here to discuss all the techniques that were used and evaluated, but some were so innovative that Brown presented them to

● **Continued on page 26**

Ton to Ton

BY ED JENKINS

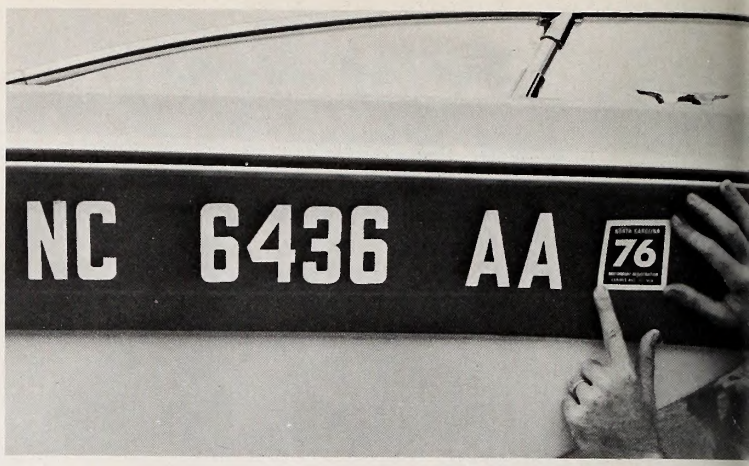


PHOTO BY LUTHER PARTIN

The validation decal must be affixed in a prescribed position as shown above. Questions about this new procedure and other recent boating law developments are discussed in this month's column.

Due to the number of inquiries received by the Wildlife Resources Commission concerning recent changes in federal and state boating laws, this month's column is devoted to some of the most frequently asked questions.

Q. I own a small fishing boat powered by a six horsepower outboard motor. I have never had my boat numbered, but someone told me that it would have to be numbered in 1976. Is this true?

A. Yes. Effective January 1, 1976, all motorboats used on public waters of North Carolina are required to be numbered. Documented vessels and boats whose only source of mechanical propulsion is an electric motor are exempt from the numbering requirements. Application forms for boat number are available from most boat dealers or by writing to: Motorboat Registration Section, North Carolina Wildlife Resources Commission, 325 North Salisbury Street, Raleigh, North Carolina 27611.

Q. How is the number displayed on the boat?

A. The law requires the owner to paint or firmly attach the number awarded on the forward half of each side of his boat in a position where it may easily be seen, and no other number may be displayed on either side of the bow. The letters and numerals must be in block characters and at least three inches in height. They may be of any solid color so long as they contrast with the background color of the boat so as to provide good legibility. The number must read from left to right as it appears on the certificate of number, and the letter groups must be separated from the numerals by hyphens or by equivalent spaces, as in the following examples:

NC-5000-AA
or
NC 5000 AA

Q. My boat is presently numbered in North Carolina. I understand that in 1976 all motorboats will be required to have validation decals somewhere on the boat. Where do I get one of these decals and where does it go?

A. You will receive your validation decal with your validated boat registration certificate. The one-year or three-year numbering period you indicate on the registration renewal notice you receive will determine which validation decal you will receive. Boats numbering for one year will receive a red decal with the number "76" on it indicating the certificate of number is valid during 1976. Those who choose the three-year numbering period will receive an orange decal with the number "78" on it indicating the certificate of number is valid until the end of 1978. The decal must be affixed on the starboard bow of the watercraft immediately following and in line with the registration number.

Q. How does having my boat registered benefit me?

A. Boat registration provides a way to identify boats and locate owners or operators of these boats. Boat registration fees pay for construction and maintenance of boat access areas, waterway markers, stream clearance, boating safety education programs, boat patrols, and administration of the state boating program. The funds for these programs are provided by boaters through boat registration fees and a small portion of the gasoline tax.

Q. I was recently operating my boat in an area in which I have never been before and saw a buoy with an orange circle with the words "Slow No Wake" on it. Since my boat makes very little wake at full speed, may I proceed through this marked area at full speed?

A. No. A no wake speed is considered to be idle speed or slow speed creating no appreciable wake.

Q. The new federal personal flotation device regulations requires boats 16 feet and over in length to have a wearable PFD (personal flotation device) for each person aboard plus one throwable type PFD aboard. Can I carry an extra vest type PFD for the throwable type device?

A. No. The throwable type PFD is classified by the United States Coast Guard as a Type IV device. Buoyant cushions and ring buoys are classified as Type IV devices. They are easier to throw to a person in the water than a wearable type PFD and keep the body higher out of the water when grasped than do the wearable type devices. ▲▼

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Seasons

There's lots of hunting for Tarheel hunters this month with snow and blue geese and Atlantic brant added December 16 (closes January 14), and the second part of the dove season coming in December 13 (closes January 10). The trapping season on furbearing animals opens December 1, and extends through February 28. In many cases, there are "exceptions" to many of these seasons, and those in question should be carefully checked in the current N.C. Hunting and Trapping Rgulations.

Wild Turkey Federation

A N. C. Chapter of the National Wild Turkey Federation is being organized, and all those interested in the welfare and future of this fine game bird may wish to contact the Chapter's interim secretary, Harold Herman, PO Box 281, Hickory, NC. 28501, for information.

Calendar Time

Word has come of two fine calendars available to interested outdoors people: "The 1976 Calendar of North American Owls," 11 x 17 inches, illustrated by woodcut prints by Martha Cawley is available from the Center of Environmental Education, Dept. P, 1621 Connecticut Avenue, Washington, D. C. 20009, for $4.95 plus 55 cents for shipping.

The 1976 Eno River Calendar, the second part of a Bicentennial issue, is now available. In addition to river scenes, it features history, anecdotes of the river's people, and a special section on botany. Cost is $2.50 plus 50 cents for postage and handling and can be obtained by writing Mrs. Pamela Strand, 2511 Vesson Avenue, Durham, NC 27707.

Boaters Take Special Note

Several significant changes in state and federal boating regulations will soon go into effect, and all boaters are urged to read this month's Stem to Stern column on page 18.

Free Wildlife Planting Material

The Wildlife Resources Commission has free wildlife habitat plantings for distribution. Application forms for these are available from County SCS offices, County Extension offices, field biologists, wildlife protectors or by writing Wildlife Plantings, Wildlife Commission, 325 N. Salisbury Street, Ralegh NC 27611. Available are annual and permanent (perennial) seed mixtures and a limited supply of several other types of planting materials.

Ocracoke Options

by Dr. John McDaniel
Lexington, Va.
Photos by the Author

"FISH!" The word took my eyes from the cold grey water to the yellow figure up the beach. Jack leaned back against the heavy surf rod and stared out beyond the breakers. I looked to the sea and saw a flash of silver as the bluefish slashed at the surface. I watched the battle for a moment, and then turned and ran awkwardly toward the jeep, fighting the wind, sand, waders, and other accoutrements of December surf fishing. As I approached the rear of the jeep the window was lowered and Jack's sister, Nelle, asked, "Has he got another one?" I answered yes, put my rod in the holder, grabbed the gaff, and half ran, half staggered back toward Jack. There was no need for speed. The ten pound bluefish would make us wait. Jack smiled as I approached. Several minutes had passed since the bluefish grabbed the cut mullet, but he still had the strength to rip line off the big spinning reel. The 200 plus pound athlete was being fought to a standstill by a ten-pound fish. "They are strong," Jack said. I smiled. The fish finally came into the wash and, after one miss, I hit him with the gaff, and Jack and I walked slowly toward the jeep with the bluefish between us. Nelle came down to meet us and the three of us admired the sleek fish. It was our fourth bluefish and each had been an unanticipated thrill. Why? Because we had come to the Outer Banks of North Carolina to hunt waterfowl! An early start had brought us to the area before our hunt was scheduled and we took advantage of the fact that the cold winter surf was alive with the big bluefish! Now, on the eve of our hunt, we had four in the ice chest and another two hours fishing time before we were scheduled to meet our guide for tomorrow's waterfowl hunt.

I cut some more mullet on the tailgate of the jeep and then the three of us took our rods and headed back to the surf.

Our equipment consisted of nine foot surf rods weighing 16 ounces and large surf spinning reels filled with 17 pound test monofiliment. Terminal gear comprised a three-way swivel, a wire leader, a three or four ounce pyramid sinker, a 4/0 hook, and a colorful cork attractor attached near the hook. We also had a supply of metal lures of the Hopkins variety but the water was dirty and the fish were interested in bait. The blues were close to the beach and long casts were not necessary. Ken Lauer, a professional surf guide from Buxton on Hatteras Island, provided us with some advice concerning current hot spots and the rest had not been difficult.

Back in the surf the three of us stood side by side waiting for the bluefish. Snow began to filter out of the cold sky reducing the visibility. A four-wheel drive vehicle, bristling with long surf rods, churned through the sand and, with the falling snow, the picture seemed incongruous. The cold forced me to tuck my hands into my pockets and cradle my rod in my arms. The bluefish picked that opportunity to find the piece of cut mullet in the dirty Atlantic. His strike almost jolted the rod out of my grasp. Bringing my hands back into action I struck the fish and felt his power as he responded with a defiant race seaward. I held the rod high, listened to the reel scream and joyfully announced the hookup to Jack and Nelle. Seconds later the run stopped and I leaned into the fish and pumped against his strength. I felt my feet sink into the sand as I braced against him. My arms ached as I fought to bring him close. The fish ran down the beach and I struggled after him attempting to gain line.

Moments later Jack stood by my side with the gaff. Several more runs, more pumping, and then he appeared at the top of a cresting wave. He saw us and ran back out tearing away the hard-earned line. My forearms and wrists were weak now and I braced the suddenly heavy rod against my side. The fish felt the pressure of the battle, and stubbornly gave ground. Finally, he was within the wash. Jack held the gaff ready and we both moved with the waves trying to get close to him. A wave caught us intent on the fish and we struggled to keep our balance. Finally he was there and the gaff hit quickly and I felt relief as Jack hoisted him. Nelle smiled as we trudged back to the jeep. I guessed 15 pounds. Jack said 17 and Nelle said 12. The fish weighed 11 pounds, 8 ounces. So much for the inherent wisdom of men! The fish had used all 11½ pounds against us. Put him in a quiet reservoir and he'd chase a 20 pound bass up on the

Mid-winter days on the Outer Banks range from wind-driven snow, to shirt-sleeve warmth. Some of the worst days may produce the best fish, like this fine bluefish caught by the author.

shore. Put him in a trout stream and he'd take your seven weight fly-line and your 50 feet of backing and tear it out of your hands. We admired the great fish for several minutes commenting favorably on his species and then placed him in the cooler and sought refuge in the front of the vehicle.

We sat in the front seat of the wagoneer, resting, fighting the 30° cold, and enjoying the unique scenery Ocracoke offers. On a cold overcast winter day, the Outer Banks present a symphony in black, white, and tan. The only bright colors are carried on tools introduced by man. The sky and sea consist of many shades of greys and whites. The tawny sand presents the only contrast. Our silent enjoyment of the scenery was disrupted by the honking of geese. A small flock passed over us, fighting against the heavy winds. I turned to Jack and smiled. We would be in the sound tomorrow, in a sink box blind waiting for waterfowl. After several more pleasant moments of observation, we agreed that five good bluefish constituted a fine afternoon and we drove back up the deserted beach toward the Village of Ocracoke. Speaking of desertion, if you are familiar with the crowds that flock to the Outer Banks in the summer, you will not find them in the winter. Surf fishermen still congregate at a few key spots on the Outer Banks but vast stretches of beach are deserted.

On arriving at our motel, our young waterfowl guide, John Griffin, was waiting and our talk turned quickly to waterfowl. John said his guests had been having good shooting and that the weather report was good for the next day! We rejoiced. Bluebird days have an affection for us but Ocracoke was promising to provide overcast skies, 20 mile per hour winds, and 30° temperatures. After a hectic, but enjoyable, evening of putting rods away, getting guns out, and trying to digest too many Ocracoke oysters, we set the alarm for 4:00 a.m. and retired with the sound of waterfowl weather buffeting the motel.

Any breakfast before a duck hunt is a joy, but fresh bluefish makes it a special treat. John was right on time and we piled into his car for the first leg of the trip to the sink box. Ah, the sink box, another special treat for those who have not hunted on the Outer Banks!

Outlawed in most sections of the country, the sink box is still legal on the Outer Banks. As the accompanying diagram and pictures show, the sink box offers the ultimate in concealment to the waterfowl hunter. Our sink box was half-full of water when we arrived but John pumped it out with a small gas engine and it took on a more hospitable look. A sink box is not spacious but there was adequate room for the three of us—only Jack and I carried guns. From a sink box you look out at water level and the decoys are around you. When waterfowl come into the decoys they do not land in front of you, or to the side of you, or below you, they land on you! After standing in the surf the sink box was comfortable.

The action was more than we had hoped for. The waterfowl began to decoy before John and his assistant took their boat away from the blind. The many illegal redheads tantalized us as they swept down on us in flocks of 15 and 20, frequently dropping right into the decoys. Bluebills were legal and they afforded great shooting as they came boldly to the decoys. Most of them came low across the water towards us, growing larger and larger until they reached that exciting point when you knew there would be shooting. The only problem with the blue-

The author admires a plump Canada goose which got a bit too close to the decoy-surrounded sink box on the Outer Banks. Combination waterfowl hunting-fishing trips depend to some extent on the weather, but certainly are good possibilities during much of the winter. Good accommodations are available.

Wave action, which can be quite extensive in these open waters, is quieted by the wing structures made of floating slotted platforms. Thus, even at high tide, water doesn't slosh into the "box." Decoys are often fastened right to these boards. Water depth is usually such that the hunter can wade to retrieve his birds as the author is doing here.

bills was that sometimes they would pitch in too close and we had to wait until they flared away to shoot. Pintails came high with suspicious eyes and afforded only the occasional shot. Geese either came low on the water in small groups with their determined and powerful flight, or they came high in larger groups that were less vulnerable to the attractiveness of the decoys. The high geese would frequently look down at us twisting their necks around to assess the situation. Mergansers, old squaws and buffleheads flashed through our decoys only several feet off the surface, frequently taking us by surprise as they swept past. Two groups of green-winged teal presented us with quick bursts of activty.

After one such burst of teal activity, Jack left the blind to wade after a cripple. (We retrieved all our waterfowl by stepping out of the blind into the two to three feet of water covering the sand bar.) Jack followed the elusive teal over a hundred yards from the blind and I watched him intently, hoping we would not lose the elegant little bird. Suddenly Nelle said, "John, I think that group is coming in." Nelle, following my instructions but not my example to be ever vigilant, had spotted a large group of bluebills bearing down on the blind. I ducked, and turned around to see them; 20 or 30 low on the water, coming out of the low sun, driving toward the blind. An instant later their wings were set and I crouched low ready to spring up. I concentrated on a big drake at the edge of the group and watched him grow larger. "Now," I said to myself and jumped out of concealment watching the bird as the little 20 gauge came up with me. The drake spun down toward the water and I shifted my eyes to the flock. They flared, now aware of the trap. I picked another that pealed back with the wind they had faced in their approach. I swung past him and he froze at the shot and plummeted into the shallow water. A double! I stood still, enjoying the quickness and the perfection. Neither duck moved on the water. It had been neat and clean. I smiled at Nelle, unashamedly proud of myself but humble in the knowledge that such moments are rare. I waded out to the ducks, picked them up gently and brought them back to the blind. Nelle and I admired them. Sleek and strong they had travelled thousands of miles to come to Ocracoke. We stroked the immaculate feathers and pushed our fingers into the deep down covering their bodies. Some time in the not too distant future we would handle them again as we prepared them for the table. It would be a special occasion; we'd buy a good wine and invite good friends to share the final act with us.

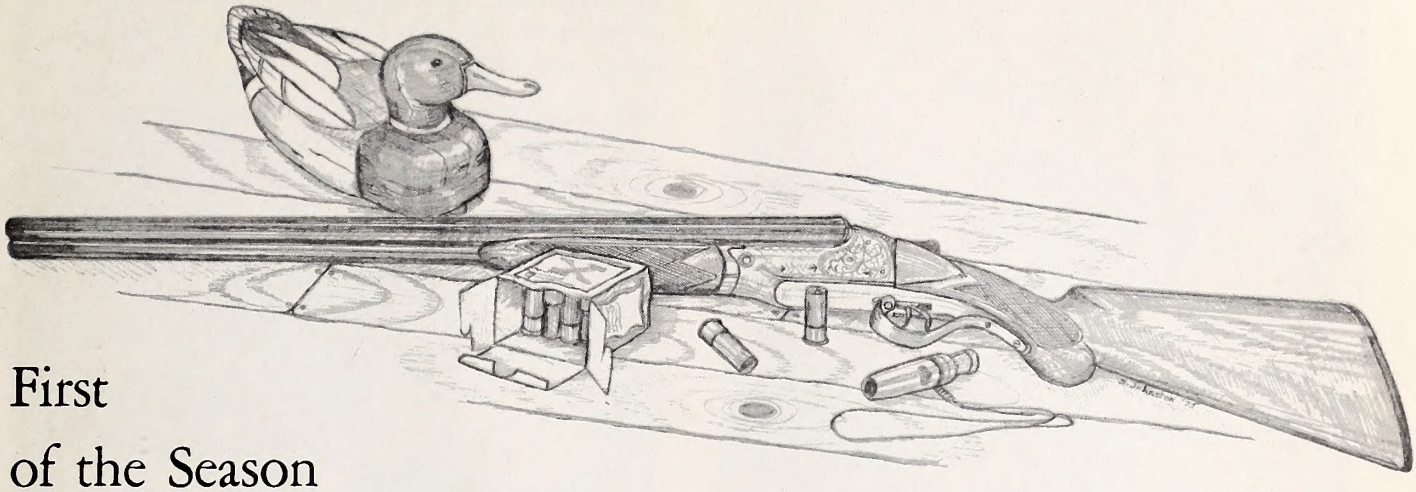
The hours passed quickly. All day long it seemed one of us was saying, "Here comes a group, looks like bluebills, they're going to decoy, get down Nelle, ready, o.k., now!"

I shoot better from a sink box. Why? Perhaps the restricted range helps, but I suspect the key is that from a sink box you shoot up at birds. Most of my hunting is of upland birds and I know I shoot over a lot of waterfowl when shooting from the perspective provided by an above water blind. From the sink box many birds are rising. Also, the stable footing in a sink box helps.

It was a great day. We missed a lot of birds, laughed, talked, drank hot Ocracoke clam chowder, enjoyed the beauty of the sound, marvelled at the grace and elegance of myriad birds, and we took some waterfowl. We would enjoy two more days in the same sink box before the December vacation came to a close.

We have enjoyed the Ocracoke harvest on many occasions since our December trip. Don't let anyone tell you that a big bluefish is poor eating! Ours were great! We baked one, broiled one, and smoked the others. All were great. The smoked bluefish was a particular treat. The ducks and the geese have been the basis of memorable meals. The waterfowl on Ocracoke may not be feeding in corn fields but our fowl were the equal of any of the corn fed ducks we have encountered in other areas.

Try the options Ocracoke offers in December! There is a lot of surf available to everyone. If you want a sink box, I suggest you contact John Griffin, or one of the other Ocracoke guides, soon, because I know three people who have already reserved one for four days next December! ▲▼



First of the Season

by Stephen N. Johnston, Jr.

ILLUSTRATION BY THE AUTHOR

THE cold swaying outlines of the marsh grass and cattails were barely perceptable against the awakening sky when the first flight of ducks whiffled over the boy's blind. The black Labrador retriever at his side whimpered at the familiar sound, but made no move other than to perk up his ears.

The boy shifted the time worn twelve gauge to his left hand and pulled back his sleeve with his right so as to expose his watch.

"Fifteen more minutes", he thought to himself. Idly he studied the pattern of ice crystals formed on the gun's barrels by his moist breath. He slid a gloved hand across the frosted steel, and now ice remained only in the ancient scrolled engraving of the old weapon's receiver.

The tale of many years was told in its battered stock, perhaps three times his own age. The old piece was quite a contrast to the shiny automatic standing in the corner of the blind.

The light was stronger now and the hushed whistling of passing wings brought the boy out of his reverie. He studied the decoys he had set out in the dark. They rode on the lapping waves of Core Sound as naturally as if they were real. His grandfather's hands had skillfully carved each one of the cedar decoys. Every detail was perfect. Here one decoy rested its head backwards on its wings as if asleep, and there another held its neck outstretched as if peering at something within the water. They boy smiled his approval and clucked his tongue, bringing the dog to attention.

Their time had come. A group of a dozen pintails buzzed the decoys from behind the blind. The boy readied the ancient doublebarrel as the pintails swung back for a second look.

The lead drake once again led his squad over the spread and the boy tucked his chin against his chest so as to hide the tell-tale white of his face under the brim of his hat.

His frosted breath came faster now and he fought the urge to brush the wetness away from his wind reddened nose. Would the pintails spook? Or was the wise old drake satisfied all was safe?

The quiet feeding call chuckle of the incoming ducks was all the answer he needed. Twelve pairs of webbed feet were simultaneously lowered and twelve pairs of wings cupped and glistened in the sun.

The boy's eyes darted from the old gun he fondled in his hands, to the new automatic in the corner of the blind and back to the incoming birds. His hands tightened on the old gun and his thumb clicked off the safety. His eyes moistened and his throat tightened, though not from the cold.

Just as the first pintails were settling into the decoys, the boy sprang to his feet. White undersides of pintails exploded against the sunlight in surprise and fear as twelve pairs of wings backtreaded, fighting to gain altitude.

The boy pulled and fired on the first drake and began the swing on a second, just as the first hit the water. Again the gun roared. Two plump, rice fed pintails rode gently and dead on the water.

The boy settled back on his stool and once again fondled the ancient gun as the Labrador started his retrieve.

Grandpa wouldn't ever use this gun or blind again. The surrounding lands and marsh, the blind, the decoys, dog and gun, and to an extent, part of himself, belonged to Grandpa. It was only fitting, he reasoned, that the first ducks of the year be Grandpa's also.

The old gun was in the corner now and the new automatic was being loaded as the black dog dropped the first glistening wet pintail at the boy's feet and headed back for the second.

The Treestand and the Deer Hunter

by Tim Brown
N. C. State University

ON any morning from October to January, thousands of North Carolina deer hunters watch the sun rise from a perch high in a tree.

These hunters are in treestands, small portable seats attached to the trunk of a tree, which give the sportsman a close view of his deer without letting the deer smell the hunter and thus be frightened away.

But helpful as they are to the hunter out to bag a trophy, treestands sometimes present dangers which mean the hunter is his own victim.

Hundreds of hunters are injured, many seriously, each year when they fall out of these stands accompanied by a loaded gun or a quiver full of arrows.

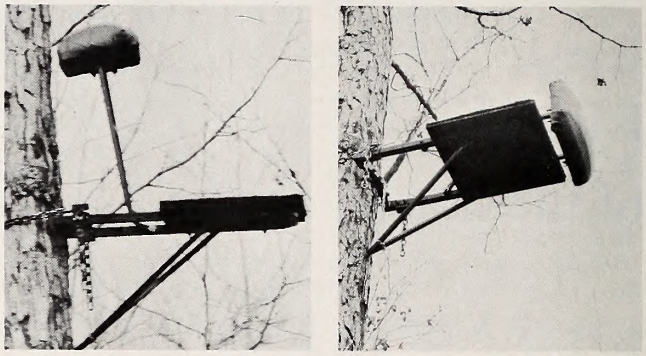
Some frequent reasons for falls from treestands are poor mounting techniques, sleeping in the treestand, over-excitement at the sight of a deer, the shock from the recoil of a gun, or just missing a step while climbing the tree.

However, in any case, every hunter should be familiar with the proper techniques of mounting and using the treestand to guard against such accidents.

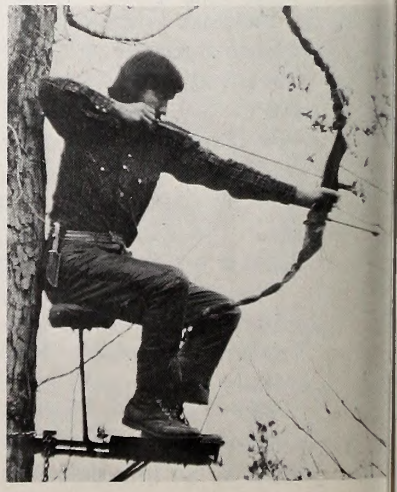
Most hunters prefer to use a portable treestand which they can move to different locations easily. The portable treestand consists of a platform, usually a few feet square, a seat which swings up into the sitting position against the tree trunk and a chain

Remember, you're alone up there in the treestand. Be extra careful; help may be a long way off should you fall.

The author wishes to express his appreciation to his father, James L. Brown, for assistance with the treestand, and to his brother, Ted Brown, for help with the photos.

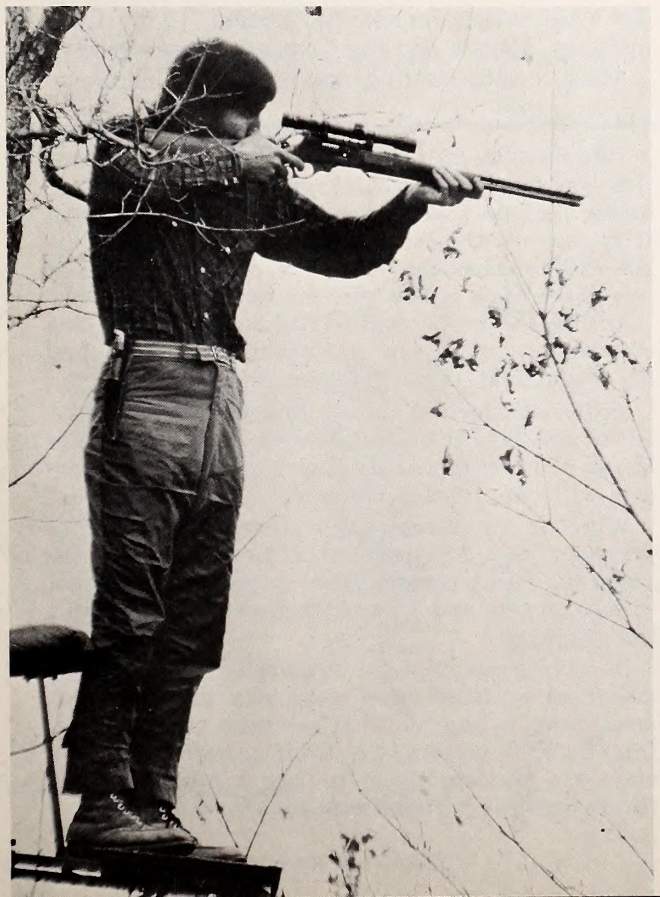


This is the treestand installed, ready for use. Make certain it is secure before entering it. The seat (right) can be folded down when not in use so that water and ice do not form on it.



Removable spikes are placed in the tree trunk to insure safe climbing to the stand. These can be taken out as the hunter comes down after the hunt. Be sure to allow room for a full draw of the bow, standing or sitting, making certain no branches interfere.

The bow or unloaded gun (above) is pulled up to the hunter with a length of rope. Note that this rope is tied to the hunter's belt and thus not held when climbing. Make sure that you have a steady position before shooting. Recoil can be a surprise when you are concentrating on the game in the sights.



that locks on both sides of the stand for support. A line of spikes is located at the back of the platform with an anchoring spike located at about a 45-degree angle downward from the platform for lower support.

When choosing a tree for mounting, always choose a sturdy tree with no limbs on the first 25 or 30 feet of the trunk. A good location is a clearing large enough to provide a 30-yard view and one where several recently used deer paths converge. Also, try to choose a tree where the stand can be mounted so that the sun will not shine directly toward the front of the stand at any time. Glare from the face or a gleaming weapon can be seen from a long distance and tends to frighten a deer.

In mounting the portable treestand, avoid crossing the deer paths. If tree drilling* is allowed, proceed to drill holes slightly larger than the nails to be used for climbing. The holes should be drilled at about a 45-degree angle to the tree so that the nails can be placed in about four inches and bent down. Care must be taken when drilling such holes high on the tree trunk since only previously installed nails are available to stand on.

Alternate nail positions up the tree until the desired height is reached and then return to the ground to obtain the stand.

Never try to carry a heavy load up the tree.

When the stand is returned to the desired height, push the row of spikes at the rear of the platform into the tree and hook the chain as tightly as possible on either side of the platform. Following this, continue to raise the platform and tighten the chain link by link until the platform will barely return to the position perpendicular to the trunk.

When the chain has been tightened as tightly as possible, push the support spike below the platform into the center of the trunk at the point of contact. The stand should now be secure.

Carefully swing the seat up against the trunk of the tree and climb up onto the stand, constantly checking to make sure the stand is secure. Also, if the weapon to be used is a bow instead of a gun, make sure there is adequate room for a complete draw of the bow.

Practice getting into and out of the stand several times. Practice is necessary because it is harder to climb into a treestand in the dark than in the daylight and most hunters enter the woods before daylight.

On the day of the hunt, board the treestand first, and then, after making yourself comfortable, pull the unloaded weapon up to the stand by a rope. After the hunt, lower it with the rope before exiting the stand.

But regardless of how securely the stand is mounted, it is only as safe as the hunter in it. The hunter should always remember that he is high above the ground and therefore use the utmost caution in handling his weapon and himself. ▲▼

*Please check item 5, page 24 of the current Hunting and Trapping Regulations for "Tree Stand" regulations on Game Lands.

- Letters
- Comments
- This & That

BACK OF THE BOOK

The St. Louis
Football Cardinals
The National Wildlife
Art Exchange
The St. Louis Children's
Hospital

Respectfully offer you the opportunity to obtain a FULL COLOR fine art collector print (prepaid — $23.50) of "Cardinals in Winter" by one of America's foremost wildlife artists — Ron Jenkins of Arlee, Montana. The original painting is from the collection of the St. Louis Football Cardinals.

The National Wildlife Art Exchange of Vero Beach, Fla., in conjunction with the St. Louis Football Cardinals, have designated that $9.00 from the sale of each collector print shall be donated to the St. Louis Children's Hospital (not for profit) to enable them to maintain and provide additional medical services to all deserving children, regardless of their color or creed. Your help is earnestly solicited.

The "Cardinals in Winter" fine art collector prints shall be available for a limited time only (through July 4, 1976). The FULL COLOR prints are printed on watermarked museum paper (100% rag) in a size of 16" x 20". They are shipped flat and guaranteed to arrive in original issue condition. On multiple orders, add $20.50 for each additional print which is to be shipped in the same package to one address.

Mail your check ($23.50) to NWAE/St. Louis Children's Hospital, Drawer 3385, Vero Beach, Florida 32960.

Muzzleloader Correction

Dear Sir:

Please correct an error that occurred in the print of my article "Muzzleloaders for the Sportsman", October issue of "Wildlife in North Carolina."

The error occurred with the misprint of "12 ga" instead of "10 ga" for the last given load for geese in the table on page 5. The loads as printed would be potentially dangerous in my opinion for 12 gauge guns.

Harold Tyus

Photo Credit Omitted

The photos of the red-cockaded woodpecker and its nest tree on page 22 and 23 of the November issue of "Wildlife", were taken and supplied by John Culler, Editor of "South Carolina Wildlife" (another fine wildlife magazine!). Thanks, John; sorry about the oversight.

• **BUCK from page 16**

poured a cup full in my face.

I remember the wail of the siren off the canyon walls. I was taken to the hospital and I woke up five or six days later full of tubes including a tracheaotomy. I was on the critical list for 16 days, took 13 pints of blood, lost one third of my left shoulder blade, three and one half ribs and three-fourths of my left lung plus a hospital bill all totaling over $13,-000.00.

This is the price of carelessness! I was on TV in Colorado and the Denver papers as a "hunting accident!" There isn't any such thing, as an accident with a gun, its carelessness!

My deer dressed out at 313 pounds and that deer cost me approximately $42.50 per pound plus permanent disability for life.

I hope this story will help all of our North Carolina hunters to profit by my mistake. Remember, guns don't kill people; people kill people. Thank God for miracles, friends and the Colorado State Patrol.

Have a safe hunting season and be careful. ⬍

• **FISHING from page 17**

fisheries experts at a Trout Symposium in Cullowhee in September 1974. Undoubtedly, the many things learned about silt control will be useful on similar projects in North Carolina, and also in other states.

Among the silt control measures used and tested were plastic lined drains, silt basins, brush barriers, silt fences, brush check dams, log check dams, seeding and fertilizer, top dressing, mulching and jute mats. Only the brush check dams proved ineffective in controlling the silt, while silt fences showed only limited value of a short term nature.

Several other techniques proved successful. Instead of grading long stretches of road, and leaving a lot of raw earth exposed for lengthy periods, shorter sections of road were graded, completed and seeded. Work was timed so that re-seeding would be most effective. Cuts and fills were also designed to incorporate a variety of control measures.

The result—in addition to saving both Steels and Upper creeks—may well prove to be a landmark for similar future work.

"We have learned a lot about controlling silt and this was one of our goals," explained Brown. "Another, perhaps overlooked, result has been that from now on, the cost of effectively controlling the silt will be considered from the planning stages as one of the costs of any road construction or renovation. The cost of silt control will be figured into the cost/benefit ratios and evaluated in the required Environmental Impact Statements."

No Environmental Impact Statement was required for the Rt. 181 project because of a grandfather clause that exempted it; however, all future projects will require such statements.

Whereas only three to five percent of the cost of previous road construction projects had been devoted to erosion control, some 15 percent was spent to save Steels and Upper creeks—a total of more than $300,000.

It is apparent that the relatively minor damage sustained by these two creeks may prove to be a small price to pay for what has been accomplished. One thing is certain, the trout fishermen of this state are far less likely to lose a stream in the future when it is threatened by a road. ⬍

Index for Wildlife in North Carolina, 1975

TITLE	AUTHOR	MONTH	PAGE
Administration			
Administrative Services		January	5
Alligators			
Alligators	Steve Price	July	14
Anti-Hunting			
Anti-Hunting, A Wasteful Issue	Kozicky & Madson	October	20
Birds			
Rare Birds & Ancient Pines	Howard Muse	February	18
Doves in Our Pine Trees	Dwight L. Peterson	March	18
Fishers at the Pond	Paul Koepke	April	16
Purple Martin Colony	Lee & deCalesta	April	22
Eastern Meadowlark	Grace S. Draper	June	13
Human vs. Woodpecker	M. Dale Arvey	June	22
4 A.M. Is For The Birds	Louise Lamica	August	24
Towhees	Duane Raver	September	14
Most Unusual Census	J. Merrill Lynch	December	15
Budget Information			
Budget Summaries		January	33
Camera			
Proper Care for the Camera	Ferman Karriker	May	18
Careers, Conservation			
Wildlife Work: Fulltime Career		February	4
All in Day's Work	Bodie McDowell	March	22
Carving			
Out of the Past		June	23
Harold Brady-Wood Carver	Derry Walker	November	8
Floating Sculpture	John Crew	Decmeber	4
Canoeing			
Near Tragedy Provides Valuable Experience	Jim Hudson	April	8
Paddle Your Way to Adventure Part 1	L. S. Lane	April	10
Paddle Your Way to Adventure Part 2	L. S. Lane	May	8
Paddle Your Way to Adventure Part 3	L. S. Lane	June	14
Coastal Management			
The Coastal Management Act	John Crew	June	8
Conservationists			
William Faver	Robert Marks	July	18
Crow			
The Eastern Crow	Rod Amundson	June	4
Dogs			
Tar Heel Retriever Club	C. F. Raymer, Jr.	April	20
Ducks			
North Carolina's Duck Harvest	Stuart Critcher	September	19
Housing Shortage	Frank Jeter	September	20
Education			
Division of Education		January	27
Endangered Species			
Saving the Red-Cockaded Woodpecker	Stuart Critcher	November	22
Enforcement			
Division of Protection		January	15
Fields Trials			
The Chant of Autumn	Jim Lasley	February	13
Fish			
River Herring, A Vanishing Resource	Harold Tyus	March	8
Fish Management			
Rockin' On the Roanoke	Rod Amundson	May	4
Saltwater Fishing Holes	James R. Reedy	June	6
Fish Attractors	Rod Amundson	July	8
A Legacy of Wild Trout	Jim Dean	September	9
Hot Hole Boom	Roy Miller	December	6
Fishing			
Down East Winter Stripers	Jim Dean	March	10
Kerr Bass In the Spring	Bob Gooch	March	14
Flyfishing for Panfish	Jim Dean	April	7
Fishing	Jim Dean	May	16
Bass Fishing	Jim Dean	June	11
Moonlighting for Rock	Gerald Almy	June	18
Structure Fishing for Bass	Bill Wicker	July	4
Long Ago and Far Away	Bill McDonald	July	6
Common Surf Fishing Goofs	Jim Dean	July	21
The Ordeal	Charles D. Lail	July	22
The Real Thing for Trout	John Crew	July	23
The Blue Monsters of Tillery	Jerry Rushing	July	24
Old Mill Ponds	Jim Dean	August	10
Deep Water Brown Trout	Alan Marshall	August	12
Into Big Timber Creek	Stewart Hardison	August	14
Robeson County Cat Hooks	Harvey Burgess	August	23
Zing . . st . . Thunk	Ted Dossett	September	16
Natural Baits or Artificials?	Jim Dean	October	11
King of the Surf	Wm. B. Black	November	10
Upper and Steels Creek	Jim Dean	December	17
Ocracoke Options	John McDaniel	December	20
Frogs			
Cook Frog Legs	Bernadette Hoyle	June	12
Game			
Division of Game		January	17
Game Lands			
White Oak River Impoundment	Rod Amundson	April	4
Croatan Game Lands	Grady Barnes	April	24
Game Management			
Conflict of Interest	Mike Gaddis	October	16
First Colony Farms		December	10
Habitat			
Helping the Beach	Mark Swanson	May	6
Look and See	Ches Crow	June	24
Stream Preservation	Frank Barick	July	12
His Dream: Wild Land	Jim Lasley	August	7
An Open Letter	Wharton Gaul	September	8
Salt Marsh	An Painter	November	4
Hiking			
Hiking The Haw For Happiness	Chris Turner	February	10
Smoky Mtn. Walk	Ron Gestwicki	March	4
Hunter Safety			
Safer Hunters	Gwen A. White	June	16
Hunter Safety for the Deaf		August	25
Hunter Safety Training	C. J. Overton	November	26
$13,000 Buck	A. H. James	December	16
Hunting			
Hunting	Ted Dossett	February	16
In Defense of Hunting	H. Eugene Russ II	February	20
Sport Hunting	Carroll Mann	August	8
Doves Down A Flyway	Bob Gooch	September	4
Martian in a Rabbit Trap	Derry Walker	September	6
Muzzleloaders for Sportsmen	Harold Tyus	October	4
Tricky Targets	Frank Mooney	October	6
Hunting Buddy	Art & Joan Cone	October	12
After You Bag Your Deer	Ed Pearce	November	16
First of The Season	Stephen N. Johnston, Jr.	December	23
Treestand and Deer Hunter	Tim Brown	December	24
Inland Fisheries			
Division of Inland Fisheries		January	6
Interagency Wildlife Cooperation			
Interagency Wildlife Cooperation		January	26
Invertebrates			
Terrestrial Flatworm	Rowland M. Shelley	July	20
Lakes			
A Profile of Lake Waccamaw		November	20
Management, Deer			
Objective: Healthier Deer	Tom Monschein	March	24
Maps			
Silent Guides	Dan Kibler	October	10
Land Use			
Land-Use Planners Get Help	Frank Barick	February	22
Motorboats & Water Safety			
Division of Motorboats & Water Safety		January	30
Nature			
Woodland Miniatures	Allein Stanley	March	16
Learning the Easy Way	Dorothy Wilhur	April	12
Animal Communications	Betty Ford	August	20
Recording Nature's Sounds	Dwight Peterson	September	24
View from Charlie's Bunion	Joyce Barrett	October	8
Opossum			
Call Him Possum	Rod Amundson	August	24
Parks, State			
Cliffs of Neuse	V. Charles Bruton	May	12
Doughton Park	Chris Turner	October	14
Pollution			
By Dawn's Early Din	James A. Sullivan	February	6
Quail			
The Bobwhite Quail	Rod Amundson	December	12
Raccoon			
The Raccoon	Rod Amundson	July	10
Reservoir			
John H. Kerr		March	12
The Promise of New Hope	Ted Dossett	October	18
Rivers			
South Fork of New River	R. L. Collins	May	23
Road Kills			
Road Kill	Don Causey	June	26
Scorpion			
N. C.'s Scorpion	R. M. Shelley	February	8
Snakes			
Timber Rattlesnake	John Crew	August	18
Snakes: What Danger Lurks	Prather & Conner	September	22
Taxidermy			
Taxidermy for the Sportsman	Gerald Almy	September	10
Turkeys			
Fall Gobblers?	J. R. Franck	October	9
Trees			
Will The Chestnut Ever Return?	Jim Dean	March	7
Trout			
Blue Trout	Ed Pearce	May	21
Wildlife Protection			
Wildlife Protector	Nancy L. Blount	July	9
Woodcock			
Woodcock Survey	Tim Stamps & P. D. Doerr	November	25

Cedar Waxwings

Painting by John Sill

LIBRA4S** 1SAMPLE9999 1
STATE LIBRARIAN
LIBRARY BLDG
RALEIGH NC 27601

LITHO BY THE GRAPHIC PRESS, INC., RALEIGH, N. C.

STATE LIBRARY OF NORTH CAROLINA
3 3091 00733 1481